

THE
MEDICAL JOURNAL
OF AUSTRALIA



VOL. II.—16TH YEAR.

SYDNEY, SATURDAY, DECEMBER 7, 1929.

No. 23.

'IODOLYSIN'
Trade Mark
IN RHEUMATISM
& RHEUMATOID ARTHRITIS

"Iodolysin" is a soluble compound of Thiosinamin (43%) and Iodine (47%), used as a fibrolytic agent for the removal of pathological fibrous tissue.

It has given strikingly successful results in the treatment of many cases of rheumatism, rheumatoid arthritis and arthritis deformans. Good results have also been reported from the use of "Iodolysin" in the treatment of strictures, pyloric stenosis and arteriosclerosis. Physicians are invited to write for leaflet giving full particulars and details of treatment.

PREPARATIONS.

"AZOULE" "IODOLYSIN," for Hypodermic Injection, min. 15 and min. 30: in boxes of 12.

"KAPSOL" "IODOLYSIN" Gelatine capsules for oral administration: each contains 2 grs. "Iodolysin": boxes of 40.

"IODOLYSIN" SOLUTION for oral administration: 1 oz. and 2 oz. bottles.

"IODOLYSIN" OINTMENT for local application: 1 oz. tubes.

"IODOLYSIN" PIGMENT for local application: 1 oz. bottles.

ALLEN & HANBURY'S (AUSTRALASIA) LTD.

13 Market Street, SYDNEY, N.S.W.

Please note new address of Surgical Department: 41, HUNTER STREET, SYDNEY.



Travel Home the P. & O. Way

WINDSOR CASTLE—close to London—is one of the historic points of interest ever remembered by visitors Home. When planning your voyage to England by P. & O. Line you are enabled to include many other famous ports and places in addition to enjoying an ocean voyage which offers every comfort and entertainment.

P. & O.

MACDONALD, HAMILTON & CO.

Agents

247 George Street, Sydney

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—16TH YEAR.

SYDNEY, SATURDAY, DECEMBER 7, 1929.

No. 23.

Authors of articles submitted for publication are requested to read the following instructions and to comply with them.

All articles must be typed with double or treble spacing. Carbon copies should not be sent. Abbreviations should be avoided, especially those of a technical character at times employed in ward notes. Words and sentences should not be underlined or typed in capitals. The selection of the correct type is undertaken by the Editors. When illustrations are required, good photographic prints on glossy gaslight papers should be submitted. Each print should be enclosed in a sheet of paper. On this sheet of paper the number of the figure and

the legend to appear below the print should be typed or legibly written. On no account should any mark be made on the back of the photographic print. If no good print is available, negatives may be submitted. Line drawings, graphs, charts and the like should be drawn on thick, white paper in India ink by a person accustomed to draw for reproduction. The drawings should be large and boldly executed and all figures, lettering and symbols should be of sufficient strength and size to remain clear after reduction. Skiagrams can be reproduced satisfactorily only if good prints or negatives are available. The reproduction of all illustrations, but especially of skiagrams, entails the sacrifice of

time and energy and is expensive. Authors are expected to take a corresponding amount of trouble in the preparation of their illustrations, whether skiagrams, photographs, wash drawings or line drawings. The references to articles and books quoted must be accurate and should be compiled according to the following scheme. The order should correspond to the order of appearance in the article. The initials and surnames of the authors, the full title of the article or book, the full (unabbreviated) title of the journal in which the article appears, the date of the issue (day, month and year) and the number of the first page should be given in this sequence.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—

	PAGE.
"The Excretion of Intravenously Injected Sodium Thiosulphate During Pregnancy: An Experimental Study in the Dog," by ADOLPH BOLLIGER, Ph.D.	806
"Experiences with Encephalography," by A. LYLE BUCHANAN, M.B., Ch.M., F.R.C.S. (England), F.R.C.S. (Edinburgh)	812
"Epilepsy," by A. P. DERHAM, M.D., B.S.	817
"Common Respiratory Affections in Children," by F. KINGSLEY NORRIS, M.D.	819
"Diverticulitis," by J. G. EDWARDS, M.B., Ch.M.	822

REPORTS OF CASES—

"Rodent Ulcer Due to Trauma," by NORMAN PAUL, M.B., Ch.M.	823
---	-----

REVIEWS—

A Text Book on Obstetrics	824
The Mott Memorial Volume	824

LEADING ARTICLES—

The Journal and the Branches	825
--	-----

CURRENT COMMENT—

Surgery of the Oesophagus	826
The Use of Gelatin in Hæmorrhage	827

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Radiology	828
Physical Therapy	829

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific	830
----------------------	-----

MEDICAL SOCIETIES—

The Clinical Society of the Hospital for Sick Children	833
--	-----

OBITUARY—

Arthur Murray Oram	834
William Digan Langton	835
Gustav Hall Böhrsmann	835
Mark Glanville	835
Athelstan John Henton Saw	835

CORRESPONDENCE—

The Registering of Body Temperature	835
---	-----

THE ALEXANDER WILSON TESTIMONIAL

BOOKS RECEIVED

DIARY FOR THE MONTH

MEDICAL APPOINTMENTS

MEDICAL APPOINTMENTS VACANT, ETC.

MEDICAL APPOINTMENTS: IMPORTANT NOTICE

EDITORIAL NOTICES

THE EXCRETION OF INTRAVENOUSLY INJECTED
SODIUM THIOSULPHATE DURING PREGNANCY:
AN EXPERIMENTAL STUDY IN THE DOG.

By ADOLPH BOLLIGER, Ph.D.,

Director of Research, Department of Urology, Royal
Prince Alfred Hospital, Sydney.

In a study on the thiosulphate renal function test in three pregnant but otherwise normal dogs it was found that after the injection of one gramme of sodium thiosulphate the two-hour thiosulphate excretion as compared with that of normal dogs was depressed.⁽¹⁾

In the meantime further studies on pregnant dogs were made confirming the previous observation. In addition to the usual amount of thiosulphate given, namely, one gramme, injections of 0.2 gramme, 0.5 gramme and 2.0 grammes were administered. The following points were then investigated: (a) The percentage of excretion for the varying amounts was established on normal non-pregnant animals, (b) varying amounts of thiosulphate were injected into pregnant dogs, both normal and nephritic and the thiosulphate output determined through the entire period of normal gestation or a part thereof, (c) the thiosulphate output was studied through the course of and subsequent to pregnancy terminating in abortion with or without eclamptic symptoms.

Technique.

Solutions containing 2%, 5%, 10% and 20% sodium thiosulphate (British Pharmacopœia) were made up. A female dog was then catheterized and ten cubic centimetres of one of the thiosulphate solutions were injected intravenously. Two hours after injection the animal was catheterized again and the bladder was irrigated in order to obtain the complete output. The two-hour sample of urine, including the wash-out, was then made up to a known volume and examined for its thiosulphate content by titration against a $\frac{N}{100}$ iodine solution. The details of the procedure are the same as described in a previous paper,⁽¹⁾ with the exception that instead of Lloyd's reagent, Fuller's earth was used, Lloyd's reagent not being available at the time.

In brief, the thiosulphate determination was as follows: A few grammes of Fuller's earth were added to the urine diluted to a convenient volume. Then the mixture was shaken, filtered and acidified and a known fraction of the filtrate was titrated against $\frac{N}{100}$ iodine solution.

The dogs used were female mongrels of all kinds, sizes and ages. Some of them came pregnant to the laboratory, others conceived while kept together with males. The period of normal gestation in the dog, the actual date of conception usually being unknown, was considered as nine weeks (sixty-three days).

The renal insufficiency in the cases under discussion was either spontaneous or was produced by deep X ray irradiation⁽²⁾ of one kidney followed by opposite nephrectomy.

Percentage Excretion of Sodium Thiosulphate After
Administration of Varying Amounts.

Table I gives the results of the two-hour excretion of sodium thiosulphate after the injection of 0.2, 0.5, 1.0 and 2.0 grammes of the salt. As far as could be made out, the animals used were normal animals and not pregnant.

TABLE I.

Percentage excretion of sodium thiosulphate after injection of 0.2, 0.5, 1.0 and 2.0 grammes of sodium thiosulphate. The figures in parentheses were obtained from animals on heat.

Bitch No.	Body Weight Kilo-grams.	Injected 0.2 gramme Excretion %	Injected 0.5 gramme Excretion %	Injected 1.0 gramme Excretion %	Injected 2.0 gramme Excretion %
1	13.0	44	50, 59, 55	61	66, 68
2	7.0	34, 42, 32	52	(74), 51, 52, 51	
3	6.0	(93), 54, 70,	48, 42, 43	(66)	62
4	14.0	56		58, 62, 59, 56	
5	14.0	35		56, 53, 48, 45	62
6	6.5	(71), 37, 37	46	60	68
7	8.0	(50), 33, 34, 42	43, 45, 45, 44	59, 56	62, 62
8	17.0	48		54	
9	5.5	36, 45, 40	55, 57, 59	64	
10	6.5	(46), 31			
11	7.5	39		64	
12	7.5	36, 39		57, 53	

After injection of two grammes of sodium thiosulphate the percentage of excretion varied between 61 and 68. The administration of one gramme brought a recovery in the urine of from 51% to 64%, while the injection of half a gramme gave a yield of from 42% to 59%. Much more irregular results were obtained after the injection of 0.2 gramme. The bulk of the findings lay between 31% and 45%. In the case of dog 4 all the findings after the injection of 0.2 gramme are above 50%, while the excretion after the injection of one gramme was found to be within normal limits. The occasional high figures (shown in parentheses in Table I) refer to animals which were on heat on arrival at the laboratory.

The Excretion of Sodium Thiosulphate in Normal and Nephritic Dogs During Normal Gestation.

The bitches in this group (six normals, two nephritics) were considered as having a normal pregnancy because they bore apparently full term puppies which were in some instances stillborn.

Chart I demonstrates the findings in a small female fox terrier, body weight six kilograms, which received for the purpose of measuring the two-hour excretion injections of 0.5 gramme of sodium thiosulphate at various times from the period of heat, through gestation, till after the puerperium. Further, for comparison, a few tests were done with 2.0 grammes and 0.2 gramme of sodium thiosulphate. The results with one gramme of sodium thiosulphate obtained in another animal were also added. Twenty-nine days after conception, calculated from the date of delivery, the thiosulphate output after the injection of 0.5 gramme was found to be depressed below normal level, namely 39%. Forty-eight days after conception, fifteen days before

delivery, the maximum depression was observed, namely 32%. Five days before delivery the excretion rose to 39% and two days after delivery it was found to be normal again and it remained within normal limits for the period of observation. The injection of two grammes of sodium thiosulphate resulted in a depression from a 68% two-hour output shortly after conception down to 55% eighteen days before delivery. Five days before delivery the excretion was 60% and ten days after delivery it was 67%. The excretion of sodium thiosulphate after the injection of 0.2 gramme of the salt was also found to be depressed, but only about 2% below the lowest normal level as established in Chart I. This bitch gave birth during the night to three full-term puppies which appeared to be very large compared with the size of the mother. When found in the morning, they were dead.

The animal mentioned in Chart I, which received one gramme injections, bore living pups which grew up to be healthy dogs. The curve is quite similar in character to that of the other animal after 0.5 gramme injection, but the depression is somewhat earlier and more pronounced, namely, from 60% before conception to 36% fourteen days before delivery.

In another animal which was brought to the laboratory on heat, the sodium thiosulphate excretion fell into the normal range with the exception of one extremely high reading. One week after

menstruation had ceased the one gramme test showed a depression below normal, namely 44%. Eighteen days before delivery the lowest excretion in the one gramme series was observed, namely 34%.

The depression of the excretion after 0.2 gramme was less, being 30% twenty days before delivery. No tests were done shortly before delivery, but a week after the birth of six healthy puppies normal figures were again encountered.

Three less complete test series on normal bitches with normal pregnancies gave similar results with the injections of 1.0 gramme and 0.2 gramme.

Chart II records the excretion in an animal which was not studied extensively before it was visibly pregnant. The test with one gramme of sodium thiosulphate twenty-eight days before delivery revealed a considerable depression, 38%, about coincident with the degree of pregnancy. In all other respects the animal appeared to be normal. Twenty-two days before delivery the left kidney was taken up surgically and exposed to X rays. Two days later the right kidney was removed. This procedure brought on a nephritis, as shown by the large albumin content of

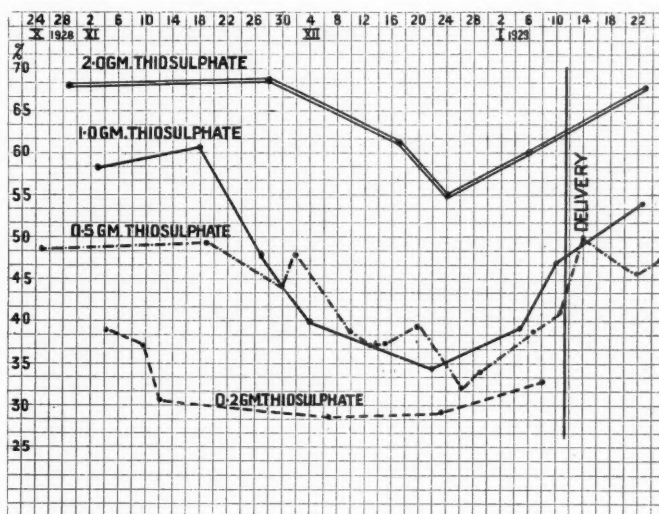


Chart I.
Results of 0.2, 0.5, 2.0 grammes thiosulphate injections in a normal bitch during normal pregnancy. The 1.0 gramme injections were done on another normal pregnant animal and are incorporated in the chart for comparison.

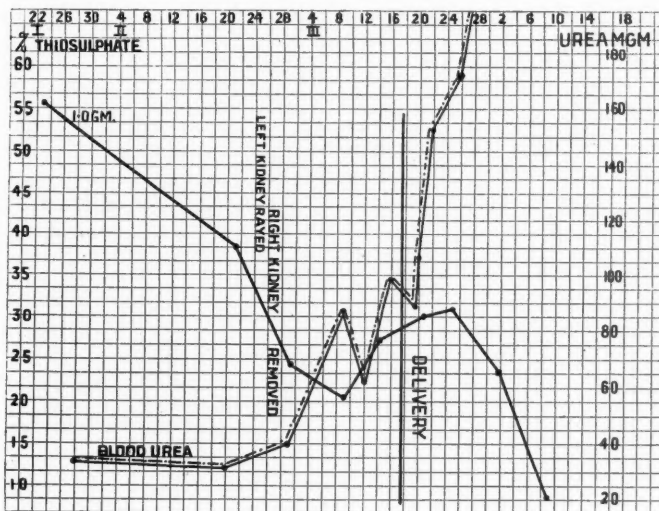


Chart II.
Results of thiosulphate injections during pregnancy complicated by experimental nephritis.

the urine and urea retention in the blood. Nine days before delivery the urea content of the blood was 86 milligrammes. The sodium thiosulphate excretion was 21%. Five days later the urea content of the blood was 63 milligrammes and the carbon dioxide combining power of the blood 38%.

Clinically the animal was in good condition. It was eating well and the wounds had healed by first intention. Four days before delivery the phenol-sulphonephthalein excretion was found to be 47% (60% normal minimum). The sodium thiosulphate excretion was 27%. Two days before delivery the urea content of the blood was 98 milligrammes and there was a moderate acidosis present, as evidenced by the diminished carbon dioxide combining power of the blood, namely 29%. The animal gave birth to six living and two dead puppies. Three days after delivery the sodium thiosulphate excretion was 30%. The blood urea was 107 milligrammes, creatinin 1.9 milligrammes and the carbon dioxide combining power 38%, which may be considered normal for a dog. The animal was in good condition and nursed her offspring. Fifteen days after delivery the sodium thiosulphate output was 22%. The urea content of the blood was 306 milligrammes. Twenty-two days after delivery the animal excreted only 9.5% of thiosulphate. The blood urea was 360, acidosis was present, the carbon dioxide combining power being 20%.

The following day the animal died. On autopsy a definite enteritis was found, as is seen occasionally in nephritic animals. On microscopic examination of the remaining kidney a severe subacute nephritis was found to be present somewhat similar to the subacute stage of X ray nephritis as described in previous papers.

Chart VI reveals the excretions in an animal, weighing fourteen kilograms, which had a moderate renal insufficiency of long standing before impregnation. Before the bitch came on heat the blood

urea in several determinations was found to be from 45 to 55 milligrammes per hundred cubic centimetres. The urine persistently contained large amounts of albumin. The thiosulphate excretion (one gramme) was found to be slightly below normal, 49%.

During gestation up to delivery the thiosulphate excretion after the injection of one gramme of sodium thiosulphate shows about the same curve as in normal bitches. After delivery there was no recovery towards normal as in non-nephritic animals. The thiosulphate excretion remained subnormal for a further period of one month. The urea content of the blood ranged from 40 to 55 milligrammes per hundred cubic centimetres during this period.

The thiosulphate excretion after injection of 0.2 gramme also underwent some depression similar to the one gramme curve, although less distinct, but eleven days before delivery

a rise above the pre-pregnancy level was noted. The excretion became subnormal again after delivery and remained so for the period of observation.

The bitch gave birth to five dead pups and one living pup which also soon died. All the pups appeared to be slightly premature. For this reason this experiment is considered to be of a transitional

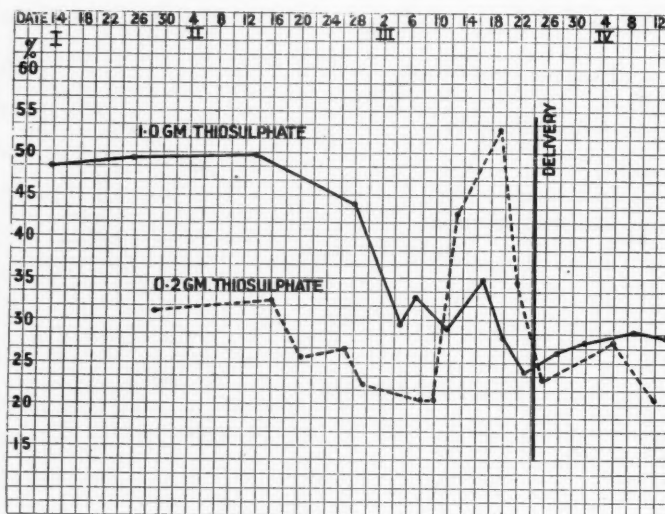


Chart III.
Results of thiosulphate injections during pregnancy complicated by a low grade nephritis.

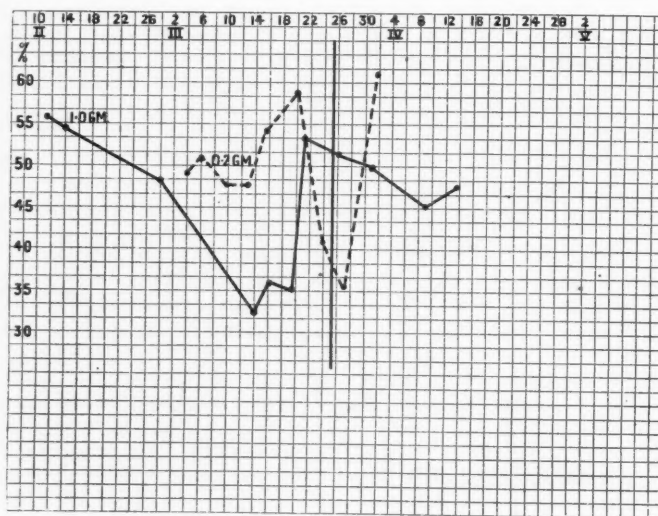


Chart IV.
Results of thiosulphate injections during pregnancy terminating in abortion. Heavy vertical line indicates the beginning of the abortion.

nature, leading over to the next group in which undoubted abortion is dealt with.

The Excretion of Sodium Thiosulphate Through the Course of Pregnancy Terminating in Abortion.

In the group of animals whose pregnancy terminated in abortion, belong six of the animals studied. These six may be subdivided into two subgroups; one group which aborted apparently spontaneously, and another group which aborted secondarily to the experimental production of renal insufficiency. Chart IV depicts the excretion of a normal bitch which expelled its foetuses about six to seven weeks after conception. It was a big, multiparous, elderly animal, weighing eighteen kilograms. The thiosulphate excretion, as well as other renal function tests, did not indicate any renal insufficiency, but about twenty days after conception the thiosulphate excretion (one gramme) was already found to be subnormal. A fortnight later the excretion was only 33% and remained in the neighbourhood of this low level for another week. Four days before the animal started to deliver, the excretion rose to a normal level, 53%. Then two

premature dead foetuses were expelled. The next day the thiosulphate excretion was still at normal level and after the test the animal gave birth to four more foetuses. In the *post partum* period the sodium thiosulphate excretion fell a little below the normal level.

The study of the sodium thiosulphate excretion

after injection of 0.2 gramme was begun only after the one gramme excretion had been already found to be depressed. In several instances the excretion was found to be normal or above normal. A few

days previous to the rise of the one gramme excretion the 0.2 gramme results were already rising, but there was a distinct fall the day before abortion started and this fall became still more pronounced the day after the uterus became empty. After this the 0.2 gramme excretion rose again to levels well above normal.

In another instance a small dog, weighing six kilograms, aborting about three to four weeks after conception, was studied. The one gramme excretion showed nothing abnormal compared with other pregnant animals until about three weeks after menstruation, when it fell from normal level to 32%. A further rapid decline of 16% was noted four days later. The next day bloody slime was observed round the vaginal orifice and although it was assumed that abortion was taking place, no foetuses could be found before or after this observation. The urea content of the blood remained normal,

but the animal appeared to be depressed. About a fortnight after the assumed abortion the thiosulphate excretion was found to be 49%, nearly the pre-pregnancy level. The 0.2 gramme excretion revealed nothing of great interest except a rise of about 10% before abortion started; it fell to the pre-pregnancy level about three weeks after the

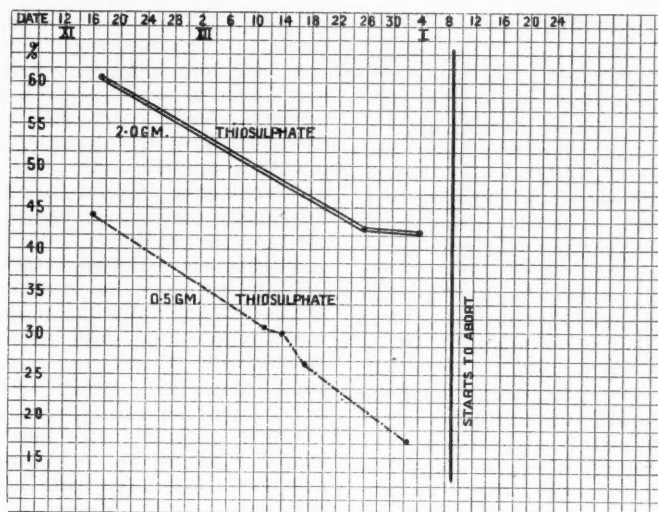


Chart V.
Results of thiosulphate injections during pregnancy complicated by toxæmia and eclampsia.

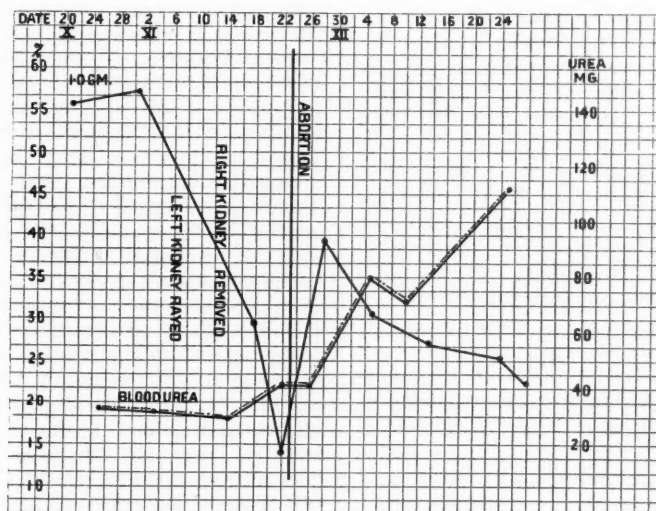


Chart VI.
Results of thiosulphate injections in a bitch which was made nephritic during pregnancy. After the thiosulphate excretion had reached the low value of 14%, abortion took place.

termination of pregnancy. After this the animal was killed and autopsy made. No evidence of renal insufficiency could be made out and according to the condition of the uterus pregnancy must have been terminated at a very early stage, not later than about four weeks after conception.

Chart V depicts the findings in a large young bull terrier bitch, weighing sixteen kilograms at the time of its first pregnancy. This animal had injections of 0.5 gramme and a few of 2.0 grammes of sodium thiosulphate. Menstruation was heavy and of long duration. It ceased thirty-six days before abortion began. The thiosulphate excretion was slightly in the lower normal range before impregnation. A week after menstruation had ceased the 0.5 gramme excretion was only 31% and declined to 26% in another week. A week before abortion started the thiosulphate excretion was only 17%. The two grammes excretion was examined thirteen days and four days before the fetuses were expelled. The result of the two determinations was about the same, namely 42%. During the entire period of gestation the animal showed great lassitude. It also vomited almost regularly after the injections as well as at other times. After two days' bleeding from the vagina eight very macerated and immature fetuses were expelled. The mother gave the impression of being very ill. She had convulsive tremors and was in an extreme state of shock and almost unconscious. The gums and tongue were practically white and no blood could be obtained from the smaller peripheral vessels. Blood was obtained by heart puncture from the dying animal and the urea content was twenty-two milligrammes. At autopsy the kidneys were found to be swollen and the liver appeared enlarged and was pale.

On microscopical examination the liver showed large and numerous areas of focal necrosis. Hæmorrhages and inflammatory changes were also present. In general the changes were comparable to those seen in human eclampsia. The kidneys presented œdema and areas of tubular necrosis.

The next three animals belong to the subgroup which aborted secondarily to the production of an experimental renal insufficiency during pregnancy. The renal insufficiency was produced by exposure of one kidney to X rays and the subsequent removal of the non-exposed kidney.

Chart VI is the excretion record of a good sized fox terrier, weighing eight and a half kilograms, which was operated on for the purpose of exposing the left kidney to X rays before any pregnancy was demonstrable. Seven days later the right kidney was removed. Five days after the second operation the thiosulphate output (one gramme) was found to be just below 30%. Four days later the very low level of 14% was reached. At this date the urea nitrogen content of the blood was only slightly elevated (41 milligrammes). The next day abortion started. The animal appeared to be ill for the next forty-eight hours, until all the fetuses were expelled. Four days after the beginning of the abortion the

thiosulphate excretion again was nearly 40%. It did not increase further, but declined with the progress of renal insufficiency, as shown by the increasing urea nitrogen retention of the blood.

Only a very few determinations of the thiosulphate output (one gramme) were done on the other two animals of this subgroup.

A bull terrier bitch, weighing eight kilograms, was found to be in early pregnancy at the second operation for the removal of the unexposed kidney. Two days after the operation the thiosulphate output (one gramme) was only 15%, but the blood urea content was of normal value, 29 milligrammes. Two days later it was noticed that abortion was taking place. Five days after the last determination and after the uterine discharge had stopped the thiosulphate excretion was 37%. Ten days later it was 35% and after this the thiosulphate excretion was diminishing constantly coincident with the increasing urea nitrogen retention as in the previous experiment.

The last animal in this group, a spaniel, weighing six and a half kilograms, had a thiosulphate excretion of only 8% (one gramme) one day before abortion. The blood urea content was high, 276 milligrammes. Two days later the animal died. The dilated uterine horns did not contain any more fetuses.

Comment.

McNider in his studies on the acid base equilibrium during gestation in the dog has pointed out that few attempts have been made to determine whether there may exist during pregnancy some generalized disturbance of the organism which may manifest itself through different organs, such as the kidney, and which may in particular appear responsible for the changes found sometimes in the tissues. As a result of his researches he frequently found a tendency of the reserve alkalis of the blood to become diminished during gestation.⁽³⁾

The depression of the thiosulphate excretion may be considered as the expression of a generalized disturbance of the organism due to gestation, but primarily of distinct physiological rather than pathological nature, because it had been found in contrast to the diminution of the alkali reserve in all pregnant animals so far examined. On the other hand, it may be considered as a purely renal phenomenon of pregnancy. In fact the thiosulphate test is known as a clinical renal function test which I found also to be of distinct value in the case of experimental renal disease produced in the dog by X ray application.⁽¹⁾ The maximum depressions as seen consistently in normal pregnant bitches would indicate severe renal insufficiency in a non-pregnant animal. On the other hand, it may be mentioned that other renal function tests were not able to disclose a renal insufficiency constantly associated with pregnancy. For example no distinct changes in the phenolsulphonephthalein excretion could be found by McNider in a large series and I was able to confirm his findings. Neither did I find any

depression in the phosphate excretion after diagnostic injections of phosphates.⁽⁴⁾

Although the depressed liver function of pregnancy is well known, I could not compare the dye tests of liver function with the sodium thiosulphate test. In the liver function tests the insufficiency is measured by the inability of the organ to destroy the dye which is recovered in excess compared with the normal function. The diminished recovery of the injected sodium thiosulphate during pregnancy indicates retention or increased destruction in the body.

I thought that I might be able to throw some light on this question by injecting different amounts of sodium thiosulphate. Anticipating a demand for thiosulphate or possible derivatives of thiosulphate during the period of pregnancy I expected to find more characteristic curves after injection of smaller amounts. This assumption was found to be untrue. After the injection of one gramme of thiosulphate in dogs the most distinct curve is obtained. After the injection of 0.5 gramme of thiosulphate the curve becomes slightly less distinct and after the injection of 0.2 gramme of thiosulphate quite frequently values were found during the period of greatest deviation which were hardly below the lower normal levels. Also after injecting on a few occasions two grammes of thiosulphate a less interesting curve was found than after the injection of one gramme of thiosulphate. I cannot explain the reason for the difference in the curves after the injection of different amounts, but in applying this test to pregnant human beings one would have to keep in mind that it would be advisable to use an amount of sodium thiosulphate which would be the equivalent of 0.5 to 1.0 gramme in a fair sized dog. In other words, one would have to inject at least about two grammes of sodium thiosulphate in order to expect favourable results. It must not be forgotten, of course, that the non-pregnant animal shows interesting differences in regard to the thiosulphate excretion after injection of different amounts. In normal dogs the highest percentage output was found after the administration of two grammes of thiosulphate and the lowest output after the administration of 0.2 gramme. But while the excretion values appeared to be quite fixed after a large amount, such as two grammes, they showed sometimes considerable fluctuation in different animals or even on the same subjects after an injection of 0.2 gramme. The excretions after the injection of one gramme and half a gramme could be considered as quite consistent, although less than in the case of two grammes.

With this experimental evidence in hand I do not yet feel prepared to attribute the changes in the thiosulphate excretion to any definite organ.

The high values obtained in animals which came to the laboratory while on heat cannot yet be interpreted, since I have not studied a sufficient number of controls to decide whether these elevated values are typical of some stage of the oestrous cycle or whether they are due to the change of environ-

ment combined with a minor operation, namely, removal of their vocal cords.

In animals with experimentally produced nephritis the sodium thiosulphate excretion became diminished according to the degree of renal damage and a depression due to pregnancy was superadded. This is shown by the fact that improvement in the thiosulphate excretion occurred after delivery. The improvement, of course, was only of a temporary nature, because of the progression of the experimental disease (Charts II and VI). It was found that if during the course of pregnancy this depression falls below 20% in the case of the one gramme or a half of a gramme injections, abortion is most likely to occur, such depression being observed in all aborting animals which had an experimental renal lesion. A sudden fall below 20% was also seen in an apparently normal animal a few days before early abortion occurred. A similarly low excretion of thiosulphate was further observed in an animal (Chart V) in which fatal eclamptic symptoms combined with abortion developed spontaneously after toxæmic symptoms of several weeks' standing.

In the case of the aborting animal of Chart IV a thiosulphate excretion below 20% (one gramme) was not noted. On the contrary, there was an increase right up to the pre-pregnancy level a few days before premature birth. As will be remembered (see Chart I) a similar but not so considerable pre-labour rise is seen in bitches with full term delivery. Although I prefer not to put too much weight on this single observation I should like to emphasize the fact that the fetuses were more developed than those of the other animals with low pre-abortion thiosulphate excretion; this animal showed no ill effects before or during labour.

In this connexion I should like to call attention also to the curve after 0.2 gramme of thiosulphate as seen in Charts III and IV. The 0.2 gramme excretion rose to pre-pregnancy level about two weeks before delivery and fell very abruptly just before and after delivery. On account of the small number of these observations it cannot be decided whether we are dealing only with a coincidence demonstrating the irregularities after the injection of 0.2 gramme or whether this curve is typical for late abortion and premature births.

The number of bitches in my series which aborted, is unquestionably larger than would be expected from veterinary experience and I thought that it would be quite justifiable to assume that in the case of uncomplicated abortion the miscarriage was due to the large amount of handling involving numerous catheterizations, particularly when I attempted to obtain as complete a curve as possible. Another possibility also might be that frequently repeated injections of sodium thiosulphate were responsible for some of the miscarriages, but since there is nothing known about such an action of sodium thiosulphate I am rather inclined to ascribe the premature birth to the first mentioned cause. The animal (Chart V) in which eclamptic

symptoms occurred, most probably presents a condition corresponding to human eclampsia in its symptoms and pathological findings.

This report is preliminary in nature and, as can be seen, many more experiments are needed to solve several questions which came up during the investigations. The experiments are published now for technical reasons which caused a temporary interruption of the work at this stage. I consider them advanced enough to be applied to the pregnant woman for further studies and think that it would be possible to gain from such a study further information regarding the physiology of pregnancy and that some practical information regarding the diagnosis and prognosis of pregnancy may be obtained. Diagnosis of pregnancy in the bitch by means of the thiosulphate test was in some instances quite satisfactory. At a period of ten days to three weeks after conception a distinct depression of the thiosulphate excretion after the injection of one gramme could already be observed, which indicated two possibilities, renal damage or pregnancy. After excluding renal damage the existence of pregnancy was regarded as established and up to the present no wrong diagnosis has been made at the early stage in which it is not yet possible to diagnose pregnancy with certainty by physical examination. On the other hand, a thiosulphate excretion below 20% after injection of one gramme or a half of a gramme indicated abortion with or without eclamptic symptoms. Similar evidence in human beings is still required and should in doubtful cases be of service to the practitioner. As pointed out by Harding, Allin and van Wyck⁽⁵⁾ the information gained by urine and blood chemistry examinations alone is often incomplete and misleading in the investigation of the toxæmias of later pregnancy. However, as has already been mentioned, the proper amount of thiosulphate to be injected into human beings will have to be established by experiment.

The anatomical changes in the kidneys of the animals with experimental renal insufficiency will not be discussed on this occasion. A report on the histological features of X ray nephritis will form the basis of subsequent articles.

Conclusions.

1. The excretion of injected sodium thiosulphate solutions containing 0.2 gramme, 0.5 gramme, 1.0 gramme and 2.0 grammes was studied in the bitch. The percentage excretion and the constancy of results increase with increasing amounts of sodium thiosulphate injected.

2. The thiosulphate excretion in pregnant but otherwise normal bitches was found to be depressed during a period lasting from one to three weeks after conception up till delivery, the maximum depression being found from three weeks to one week before delivery. All the concentrations studied showed this depression, but it was usually best observed after the injection of one gramme of sodium thiosulphate and was least distinct after the injection of 0.2 gramme.

3. By determining the thiosulphate excretion it is possible to diagnose pregnancy in bitches with comparative certainty.

4. In bitches with diminished thiosulphate excretion due to renal insufficiency, pregnancy aggravates the diminution.

5. If in cases of pregnancy complicated by nephritis or toxæmia, the excretion of sodium thiosulphate falls below 20%, abortion occurs.

I wish to record my grateful appreciation of the courtesies extended to me by the staff of the pathological and biochemical laboratories, Royal Prince Alfred Hospital. I am particularly indebted to Dr. A. H. Tebbutt and Dr. F. S. Hansman, honorary directors of the departments.

References.

- ⁽¹⁾ A. Bolliger: "Renal Function Tests with Sodium Thiosulphate and Sodium Iodide," *Archives of Internal Medicine*, May, 1928, page 63.
- ⁽²⁾ F. W. Hartman, Adolph Bolliger and H. P. Doub: "Experimental Nephritis Produced by Irradiation," *American Journal of the Medical Sciences*, October, 1926, page 487.
- ⁽³⁾ William de B. McNider: "The Development of a Toxemic Condition in the Dog During Gestation," *The Journal of the American Medical Association*, January 14, 1928, page 71.
- ⁽⁴⁾ A. Bolliger: "The Intravenous Injection of Phosphates," *THE MEDICAL JOURNAL OF AUSTRALIA*, May 18, 1929, page 650.
- ⁽⁵⁾ V. J. Harding, K. D. Allin and H. B. van Wyck: "Non-Protein Nitrogen and Uric Acid Values in Blood in Pregnancy," *The Journal of Obstetrics and Gynaecology of the British Empire*, Winter, 1924, page 595.

EXPERIENCES WITH ENCEPHALOGRAPHY.¹

By A. LYLE BUCHANAN, M.B., Ch.M. (Sydney),
F.R.C.S. (England), F.R.C.S. (Edinburgh).
Honorary Assistant Surgeon, Sydney Hospital.

I PROPOSE to deal with the subject of encephalography in the following order: Definition of terms, discussion of necessity for better localization, brief indication of other methods available, dangers and limitations and indications for method, with technique, what practical results can be expected, with a series of films in which good results can be shown as a direct consequence, and general conclusions.

I ask your indulgence, from the personal standpoint because I feel very keenly that many here have had much wider experience and may have tried and discarded methods that seem to give fair promise. But as far as facts and treatment are concerned, only the severest criticism will winnow the wheat from the chaff and insure progress on right lines; I am hoping tonight for much information and help, particularly in distinguishing abnormal or normal detail on the films.

Definitions.

Ventriculography^{(1) (2)} is direct injection of air or other substances into ventricles through a trephine hole in the skull, followed by X ray examination.

Ventricular estimation⁽³⁾ is the aspiration of fluid from both lateral ventricles with measure-

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on August 8, 1929.

ment of the content, noting of position, and usually with injection of dye.⁽⁴⁾

Encephalography is injection of air by the lumbar or cisternal route in order to demonstrate all the sulci and cisterns as well as the ventricles.

Arterial encephalography is injection of solutions into the two common carotids alternately, in order to show up the middle cerebral artery and its branches.

Need for Better Localization.

The difficulty of localization even with well developed lesions is notorious. It is estimated from long series that by radiography alone⁽⁵⁾ 6% of brain tumours can be localized and by clinical methods as used by physicians in the best neurological clinics only 77%⁽⁶⁾ can be localized, hence the number of methods, many elaborate, evolved for purposes of localization of the remaining 23%. However, it is not in this class of case in which encephalography has any extensive application, but in the large group of conditions with signs of meningeal irritation or injury, including those with an inflammatory blockage of cerebro-spinal circulation.

Other Physical Means of Diagnosis.

Before introducing the present methods Dandy experimented with various substances, including thorium, bismuth and potassium salts⁽¹⁾ without success.

"Lipiodol"⁽⁷⁾ or iodine in poppy seed oil and "Campidol"⁽⁸⁾ or iodine in rape seed oil and inorganic iodides⁽⁸⁾ and bromides have been used at various times, but have not been freely adopted. Attempts have been made with considerable success to localize tumours by injecting the common carotid artery,⁽⁹⁾ but this applies only to lesions which distort the middle cerebral artery⁽¹⁰⁾ and its branches. Ayer's puncture or cisternal puncture has been substituted for spinal puncture, but for this purpose has all the disadvantages of the lumbar route and in displacement of the medulla or abnormality of the vertebral artery is much more dangerous.⁽¹¹⁾ Ventriculograms⁽¹⁾ may be made at times when encephalograms are contraindicated, but ventricular estimation⁽³⁾ is being more used and renders many ventriculograms unnecessary.

Dangers and Limitations.

The greatest disability under which encephalography has laboured, has been that up till a few years ago when electro-surgery and special hæmostatic methods were introduced into brain work,⁽¹²⁾ even an accurate localization led to little really practical result in patients with tumours for whom it was then most often used. The mortality from brain operations was enormous and the benefits in the survivors were often only temporary. If a procedure involving any risk at all were suggested while the patient was comfortable and had his sight, he was rightly advised to wait. When the dreaded optic neuritis and vomiting appeared, diagnostic as we know now, not of brain tumour, but the one of obstructed venous outflow from the base of the

skull⁽¹³⁾ and the other of blocked cerebro-spinal circulation with back pressure,⁽⁴⁾ signs not of the disease, but of an approaching fatal termination, then a pneumogram was allowed. In these patients, with their brains already jammed into the *foramen magnum* or even more commonly into the *incisura tentorii*, with perhaps three millimetres between them and death, a last desperate effort to localize the lesion was made and the resultant sudden death blamed as much on the manœuvre as on the lesion and not at all upon the delay. Such cases are not so dreaded now, but the technique of their care involves preliminary unblocking, according to the urgency of the condition and the accuracy of clinical localization, by intravenous or rectal injection⁽¹⁴⁾ of hypertonic saline solution, by ventricular puncture or by wide cranioplastic or suboccipital decompressions. Encephalograms are definitely contraindicated and ventriculograms are rarely necessary, ventricular estimation and injection of indigo-carmin taking their places.

Figures I to IX are reproduced to demonstrate the changes that can be recognized by means of encephalography.

FIGURE I is the skiagram of the skull of a cadaver of an elderly male. It shows definite external atrophic hydrocephalus. The *insula* and *opercula* are well seen.

FIGURE II is a skiagram of the skull of a girl, aged fifteen years, who had had severe epileptic fits for two years, averaging six each day. A moderate degree of both internal and external hydrocephalus, with widened superolateral angle, dilated fourth ventricle and very wide prominent sulci, is seen. The patient improved after the encephalogram and now, eighteen months later, sometimes has a clear month's interval between the seizures. Previously all treatment in good hands had been of no avail.

1. *Sulcus cinguli* and branches. 2. Callosal sulcus. 3. Chorioid fissure. 4. *Cisterna chiasmatis*. 5. Lambdoid suture. 6. *Cisterna venæ magnæ cerebri*. 7. *Vallecula cerebelli*. 8. *Cisterna pontis*. 9. *Cisterna spino-médullaris*.

FIGURE III is the skiagram of the occipito-anterior view of the skull of the same girl (see Figure II).

1. Anterior horn. 2. Caudate nucleus. 3. Thalamus. 4. Third ventricle. 5. Fourth ventricle. 6. *Cisterna pontis*. 7. Descending horn. 8. Chorioid sulcus. 9. *Crus cerebelli*. 10. Orbital fissure. 11. *Corpus callosum*. 12. *Sulcus cinguli*. 13. Lateral fissure and frontal operculum. 14. *Sulcus triangularis*. 15. Temporal operculum.

FIGURE IV is the skiagram of part of the skull of a man, fifty-four years of age, who had persistent and agonizing headache. It shows a greatly increased subarachnoid space over the left *insula* and dilated ventricles, with rounded outer angles. This patient professed relief for several weeks; then he changed his address and cannot now be located.

The film was badly taken; the ventricles are obscured by the frontal sinuses. The cerebro-spinal fluid was inadequately examined; its pressure was not measured. The phenolphthalein excretion by the Pachionian bodies was not tested. Reexamination with improved technique might perhaps locate the cause of the hydrocephalus and lead to a cure.

1. *Corpus callosum*. 2. Superior frontal gyrus, medial surface. 3. *Sulcus cinguli*. 4. Callosal sulcus.

FIGURE V is a skiagram of the skull of a man, aged thirty-five years. He had had a gunshot wound of the skull; the bullet entered the vertex and left through the hard palate. Forty-eight cubic centimetres of air were injected. The ventricular shadows were taken thirty hours after insufflation. In the skiagram a track of liquefaction from the entrance to the exit is seen; it appears to com-

municate with the anterior horn. There is some atrophy of both frontal lobes. The remainder of the ventricular system is normal.

FIGURE VI is a skiagram of the opposite side of the brain of the same patient (see Figure V). It is approximately a normal ventriculogram with only slight enlargement and distortion of the anterior horn.

FIGURES VII, VIII and IX are skiagrams of the skull of a cadaver who was thought to have been suffering from a meningioma during life.

FIGURE VII reveals the effects of X rays passing at varying angles in localizing the several cisterns, sulci and gyri.

1. Calcarine fissure. 2. Parieto-occipital fissure. 3. Collateral fissure. 4. Lateral fissure. 4a. Posterior limb of the lateral fissure. 5. Central sulcus (fissure of Rolando). 6. Precentral sulcus. 7. Superior frontal sulcus. 8. Inferior frontal sulcus.

FIGURE VIII illustrates the effect of the insertion of cotton wool and also of testis under the *dura mater* on the ventricular shadows.

FIGURE IX shows some lead impregnated threads lying in the *sulcus lateralis* and its anterior and posterior horizontal rami, in the upper and lower frontal, central and precentral fissures and also in the calcarine and parieto-occipital fissures.

Among other encephalograms shown was that of a male, aged fifty-four years, who had had insufferable headache for ten years. It was seen in the film that the subarachnoid space over the left insula was greatly increased and that there were rounded outer angles to the ventricular shadow. He professed complete relief for the period after operation during which he was under observation. He has unfortunately left his former address, so that the final result cannot be traced.

Another patient whose encephalogram is not reproduced, was a female, aged twenty-eight years, who was admitted in May, 1928, diplegic and semicomatose. It was noted in the encephalogram that the *cisterna basalis* contained air only, indicating the presence of a tumour in the posterior fossa. I think that a more suitable procedure, in the light of Dandy's and Cushing's work, would be a double ventricular estimation with the head prepared for an immediate suboccipital decompression, if necessitated by failure of breathing. The conditions form very bad "risks"; the patients often die suddenly under medical treatment and I think that all forms of pneumograms are contra-indicated, excepting perhaps after an osteoplastic decompression has been performed.

Other encephalograms exhibited at the meeting included that of a male, *etatis* forty-seven years. He had had a mild attack of encephalitis three months previously. The contours of all the ventricles and sulci seemed to be normal.

Another patient was a male, *etatis* twenty-eight years, in whom only thirty cubic centimetres of air were injected, as the cerebro-spinal fluid pressure rose above 300 millimetres of mercury. He had been at the time free of fits for eleven weeks and had no headaches. He had previously had constant headaches and the longest interval between the fits for a period of ten years had been three weeks.

A further patient whose encephalogram was shown, had suffered from typical Jacksonian epilepsy. Considerable dilatation of the ventricles, more than twice the normal size, was seen in the film. There was obliteration of the sulci over both parietal regions. At the operation a right-sided pachymeningitis with adhesions of the *dura mater* and of a cyst about thirty-two millimetres (one and a quarter inches) in diameter over the right inferior frontal gyrus were disclosed.

Dangers.

The danger can be estimated only roughly from the literature. The figures would be more unfavourable if all attempts by surgeons were published; but all the figures apply to the earlier stages of this new branch of study. In skilled hands they would be much more favourable today when the operative mortality even of patients with brain tumour is less

than that for Wertheim's operation⁽¹²⁾ and the three-year survival rate is greater.⁽¹⁵⁾ For ventriculography Grant⁽⁶⁾ gave a mortality of 8.1% among 392 collected cases up to 1924, while Bethea⁽¹⁵⁾ up to 1927 recorded a mortality of only 2.4% among 76 of his own patients. For encephalography the following figures are available: Carpenter⁽¹⁷⁾ one death among forty patients, including a number with brain tumour. Martin and Uhler had no deaths among fourteen and Petersen⁽¹⁸⁾ one among twenty-two, but that patient had also had a ventriculogram for a tumour found to be present. Foerster⁽¹⁹⁾ in over one hundred patients and Friedman in sixty-five report "none due to the method." Purves Stewart⁽²⁰⁾ does not give his figures. In my series of six patients the one with tumour was unsuitable for the method, but it was carried out before ventricular estimation had been popularized as an alternative,⁽³⁾ while of the other five none has given me the slightest anxiety.

Precautions.

I think that all the figures available show that the dangers are those due to high intracranial tension and are shared even by lumbar puncture in patients with tumour. It is believed that this danger is eliminated by the following precautions: (i) Complete preliminary physical and neurological examination, including that of the blood pressure, the fundi and visual fields, (ii) preliminary measurement and maintenance throughout of the exact original cerebro-spinal pressure, rejecting any patient with pressure of over 300 millimetres of water, (iii) preparations for immediate operation, if necessary; since even these precautions may not eliminate the formation of pressure cone, the presence of a neurological surgeon is advisable, the patient's head should be prepared for operation and there should be a supply of local anæsthetic and one hundred cubic centimetres of 15% saline solution available.

Advantages Over Ventriculography.

Encephalography seems to possess the following advantages over ventriculography in suitable cases. It has a very low mortality, probably none; air can be removed in every instance by spinal puncture with the patient in the Trendelenburg position;⁽²¹⁾ there is no danger of cerebral hæmorrhage or injury, no variation in the intracranial pressure which can be constantly checked and maintained. A full picture of the subarachnoid spaces is obtained, depicting many meningeal and superficial lesions not seen in a ventriculogram. It is for these lesions especially that the method is so safe and has unexpectedly yielded such good therapeutic results that it will probably be wise to use it prior to operation on all patients with Jacksonian epilepsy without gross deformity and on those with traumatic headache.

Contraindications.

Encephalography would seem to be either unnecessary or dangerous in the following conditions: (i) If there has been accurate localization or successful treatment of the patient by clinical methods. (ii)

ILLUSTRATIONS TO THE ARTICLE BY A. LYLE BUCHANAN.

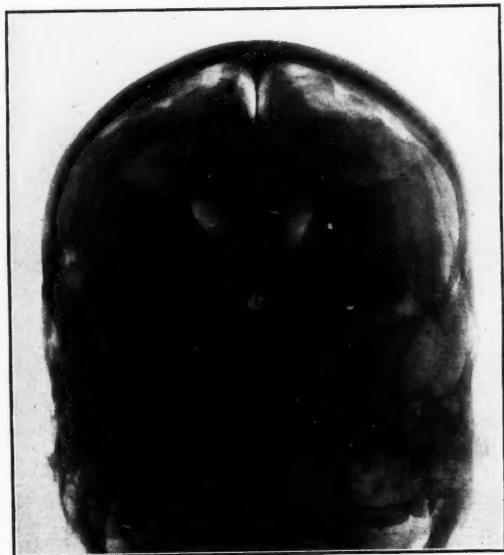


FIGURE I.



FIGURE II.

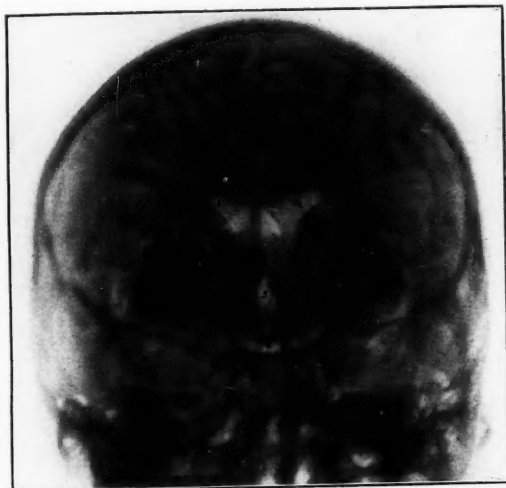


FIGURE III.



FIGURE IV.



ILLUSTRATIONS TO THE ARTICLE BY A. LYLE RUCHANAN.



FIGURE V.



FIGURE VI.

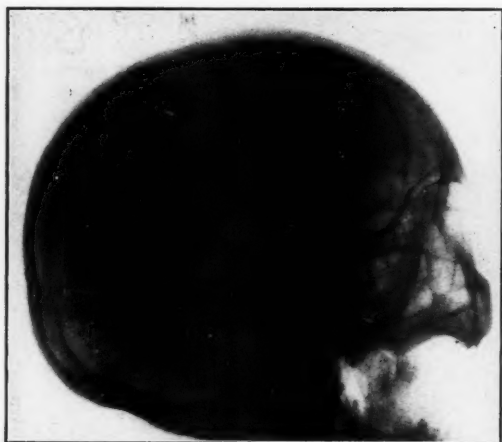


FIGURE VII.



FIGURE VIII.

ILLUSTRATIONS TO THE ARTICLE BY A. LYLE BUCHANAN.



FIGURE IX.

ILLUSTRATIONS TO THE ARTICLE BY NORMAN PAUL.

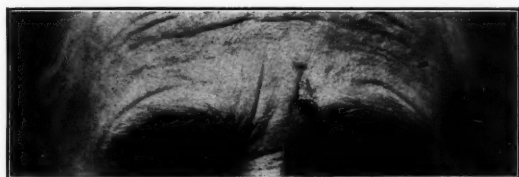


FIGURE I.



FIGURE III.



FIGURE II.

ILLUSTRATIONS TO THE ARTICLE BY J. G. EDWARDS.



FIGURE I.



FIGURE II.



FIGURE III.



FIGURE IV.

If the surgeon is not prepared to undertake any operation for the relief of the condition to be localized. (iii) If there is suspicion of the presence of a subtentorial tumour or abscess. (iv) If the preliminary investigation advocated above shows the presence of high intraspinal pressure or a high grade of choked disc. The manometer used for the patients in my series records a maximum of 500 millimetres of water.

Indications and Special Uses.

Encephalography is recommended for diagnosis (i) combined with the injection of sodium iodide or of indigo-carmin for the location of the block in hydrocephalus if early enough to prevent atrophy, by suitable operation, (ii) for the exclusion of tumour or abscess in early stages of the convulsive states, psychoses and neurasthenias, (iii) for the localization of cysts, adhesions and atrophic areas, especially post-traumatic and post-encephalitic conditions, before pressure symptoms have developed, (iv) in any patient with persistent headache, the cause of which cannot be located by a skilled physician, especially if the headache be steadily increasing, if it be relieved by lying still and aggravated by all the functions that raise venous pressure in the head.

Encephalography is useful for combined diagnosis and prognosis (i) in the so-called "functional sequelæ" of head injuries, especially in patients claiming under the *Workers' Compensation Act*, (ii) in epilepsy and *petit mal*, (iii) in the atrophic cerebral conditions, especially the dementias and general paralysis of the insane, (iv) in infants with symptoms suggestive of the sequelæ of subdural hæmorrhage or of specific meningo-encephalitis or poliomyelitis or one of the three forms of hydrocephalus (obstructive, hypersecretive or atrophic).

It is valuable for treatment in epilepsy⁽²²⁾ other than of the congenital or myoclonic type which has resisted skilled treatment by sedatives and ketonic diet, especially if progressive. My two patients both appear to have greatly benefited. It is of value also in idiopathic and post-traumatic headache⁽¹⁶⁾ not relieved by rest, bromides, hypertonic saline solution and other medical treatment. My patient, after many years of constant headache, professed relief until he was lost sight of.

Technique.

The material used is from four cadavers for the experimental work and from the six patients referred to in this article. The technique has been varied in each case with improvements suggested by experience during the last eighteen months. The procedure adopted recently is as follows.

A full neurological and physical examination is carried out. The blood pressure readings are taken and the fundi and visual fields for colour are examined. A preliminary injection of morphine and atropine is given. The lumbar puncture is performed with the patient in the sitting position with a cushion placed under the buttocks. The patient lies bending comfortably forwards with his head supported by the chin on a suitable rest and held in

position by a nurse. One cubic centimetre of cerebro-spinal fluid is removed for examination. A three-way stopcock mounted with a rubber tube to prevent movement of the needle is fitted to the puncture needle. A water manometer of fine glass tubing is attached, with a trap intervening in order to catch the cerebro-spinal fluid as it flows into the tubing. The pressure is carefully noted in order that the same pressure may be maintained throughout. If it is over 300 millimetres of water, the lumbar route is abandoned. Queckenstedt's test is applied for patency of the spinal canal. Cerebro-spinal fluid is slowly withdrawn, at first five cubic centimetres at a time and then two cubic centimetres, the pressure being noted after every manipulation. Air is introduced by the syringe after having been filtered through cotton wool. The amount necessary to maintain the original pressure is used and is recorded accurately. The quantity of air that has to be injected is less than the quantity of cerebro-spinal fluid that is withdrawn. It is usually about 75% of the latter. The procedure usually takes forty-five minutes.

The amount of cerebro-spinal fluid and air varied greatly. From 130 cubic centimetres to forty-five cubic centimetres of cerebro-spinal fluid and from 110 to 30 cubic centimetres of air were used. The smallest amount of air that gave a full ventricular picture was forty-eight cubic centimetres. Thirty cubic centimetres were injected into one patient whose cerebro-spinal fluid pressure reading was 260. The ventricles filled at once in each instance, save once when the fourth ventricle was blocked; this was seen in the encephalogram.

Complaint at the Time of the Operation.

About thirty to forty cubic centimetres of air were well tolerated. After this quantity had been exceeded the patient usually complained bitterly for a few minutes, as a rule of headache, sometimes of pain in the shoulders. Two patients vomited. After a few moments the complaint became less urgent. Apparently the maximum headache coincided with the filling of the subarachnoid space, but it is at this stage that the gyri are separated from one another and from the *dura mater* by air and possibly a mobilization is effected which may account for the relief of the headache and the improvement in the epilepsy. When larger quantities are injected the headache is not severe, unless the head is moved. The worst complaints were from one patient who now states most emphatically that his suffering did not equal the headache after a single epileptic fit and who has not had a fit since the insufflation.

Persistence of the Air.

The air leaves the subarachnoid space within twenty-four hours. It can be removed completely by placing the patient with his head low and performing spinal puncture. None of the patients in this series has complained sufficiently to render this necessary or desirable. The best outline of the ventricles is seen on the following day. Bubbles of air in the ventricles have been detected fourteen

days later. Oxygen has been suggested for this purpose and I have arranged to use it on an animal experimentally. It will then be possible to observe the meninges and ventricles at subsequent operations.

Radiological Examination.

The radiologist's problem is complicated by the fact that while the air remains in the subarachnoid space, the patient complains of pain on movement. But the presence of the air is one of the great advantages of encephalography over ventriculography in portraying the cisterns and the sulci. The air mounts immediately and full pictures can be taken as soon as the patient is brought to the radiological room. The procedure is as follows.

A postero-anterior screen examination is carried out to confirm the assumption of the presence of air. This examination regulates the position of the head. A skiagraphic film is then exposed and developed. After this has been observed, an antero-posterior and right and left lateral skiagrams are taken and developed. If any abnormalities are detected in the skiagrams, the results are checked, if possible, on the screen, by turning the head and observing if the abnormality is constant or merely due to undisplaced fluid. If the abnormality is not visible on the screen, as may be the case when the site is the descending horns or the transverse sinus, the skiagram is repeated after the head has been moved.

I suggest that the outfit for this work should comprise a combined X ray and insufflation room. The patient should lie prone at an angle of 45°, firmly supported, or he should sit in a special chair, bending forward, but firmly supported. The head is steadied by means of a movable head rest. The X ray tube and the Potter-Bucky diaphragm should be movable above, below or to the side of the head. The radiologist should observe on the screen as each forty, sixty and eighty cubic centimetres are injected. As soon as he reports that adequate filling has taken place, the required exposures are made. This would obviate the pain of moving or shaking the head and the support would largely obviate all nausea. Twelve hours later skiagrams should be taken for the ventricular shadows. All the exposures should be stereoscopic.

At present the patient is carried to the X ray room. The surgeon and radiologist collaborated at the actual examination. This is very important. In the last two examinations I controlled the placing of the head by the preliminary use of the screen. Skulls vary greatly and it is important in postero-anterior positions to avoid hiding the third and fourth and even the lateral ventricles by the frontal sinuses.

In the lateral positions, to see the fourth ventricle the mastoid and petrous processes must be removed from the line of vision by tilting the vertex slightly upwards and rotating the face slightly downwards. On the other hand, to see the outline of the occipital lobe and calcarine fissure the head is tilted slightly downwards.

In the antero-posterior and postero-anterior positions any obliquity must be corrected by obtaining a clear view in one line of the sagittal sulcus and *fala cerebri* and *septum pellucidum* or if these structures cannot be seen, of the nasal septum or pineal body if calcified.

To see the basal cisterns clearly in the antero-posterior and postero-anterior pictures the head must be so tilted that the rays fall parallel to the surface of the basi-occipital bone.

To see the sulci as clearly as possible the patient should be examined immediately after the insufflation, as much subarachnoid air is absorbed within three or four hours. The tube should be below the head and the Potter-Bucky diaphragm above. The latter is not essential, as the skiagrams containing shadows of the frontal gyri and of the lateral, terminal, callosal, circular, choreoidal, calcarine, post-central sulci demonstrate.

To demonstrate the ventricles, the four standard positions, the antero-posterior, the postero-anterior, the right lateral and the left lateral, will suffice, with precautions for the avoidance of the frontal sinuses and petro-mastoid. The best lateral exposures are taken twelve to twenty-four hours later, when the subarachnoid air is absorbed.

Conclusions.

1. In the majority of brain tumours in the stage usually seen at the present time by the consultant, the lesion can either be located clinically or it is so far advanced that encephalography is contra-indicated and other means must be resorted to.

2. In patients with atrophic or irritative conditions without greatly raised intracranial tension encephalography often has a definite localizing value. From the evidence available at present it appears to be without risk, if adequate safeguards are included in the technique.

3. Many observers have noted definite therapeutic results in the latter class of patient. Whether this is due to suggestion or to insufflation, it at least offers encouragement for further study. The present series reveals some useful results.

4. Like most physical means of diagnosis and therapy, it is justified only when supplementary and subservient to efficient medical treatment.

5. It is conceivable, if the harmlessness of the method becomes established by extended experience, that it may take a position in cerebral diagnosis similar to that now occupied by pyelography.

Acknowledgements.

My thanks are due to Dr. J. G. Edwards and Dr. W. A. Edwards and to Dr. Anderson Stuart for their expert help in radiology at the Sydney Hospital and the University, to Dr. Evan Jones for neurological and technical advice, to Professor Burkitt and Professor Shellshear for their aid in anatomical interpretation, to the members of the staffs of the X Ray Department at Sydney Hospital and of the Anatomy Department for much labour out of hours, and not least to Mr. Bosch whose magnificent bequest is giving us modern laboratory and research facilities.

References.

- ⁽¹⁾ W. E. Dandy: "Ventriculography Following Injection of Air into the Cerebral Ventricles," *Annals of Surgery*, July, 1918, page 5; "Roentgenography of the Brain After the Injection of Air into the Spinal Canal," *Annals of Surgery*, October, 1919, page 397.
- ⁽²⁾ Ralph Noble: "The Value of the Ventriculogram in the Localization of Cerebral Tumour," *THE MEDICAL JOURNAL OF AUSTRALIA*, March 6, 1928, page 268.
- ⁽³⁾ F. C. Grant: *Surgery, Gynecology and Obstetrics*, May, 1928, page 689.
- ⁽⁴⁾ W. R. Brain: "A Clinical Study of Increased Intracranial Pressure in Sixty Cases of Cerebral Tumour," *Brain*, Volume XLVII, page 105.
- ⁽⁵⁾ J. H. Bull: *Bulletin of the Johns Hopkins Hospital*, Volume XXVII, 1916, page 311.
- ⁽⁶⁾ F. C. Grant: "Ventriculography: A Review Based on an Analysis of Three Hundred and Ninety-two Cases," *Archives of Neurology and Psychiatry*, Volume XIV, 1925, page 513; "Indications for and Technique of Ventriculography," *Radiology*, November, 1927, page 388; "Ventriculography," *American Journal of Roentgenology*, September, 1927, page 264.
- ⁽⁷⁾ J. S. Sicard and J. Forrester: "Méthode d'Exploration Radiologique par l'Huile Iodée," *La Presse Médicale*, juin 2, 1923, page 493.
- ⁽⁸⁾ C. H. Frasier: "Iodized Rapeseed Oil for Cerebro-spinal Visualization," *The Journal of the American Medical Association*, November 24, 1928, page 1609.
- ⁽⁹⁾ Egas Moniz: "Injections Intra-Carotidiennes," *La Presse Médicale*, Août 6, 1927, page 969.
- ⁽¹⁰⁾ Egas Moniz: "L'Encephalographie Arterielle," *Journal de Médecine de Bordeaux et du Sud-Ouest*, novembre 1928, page 915.
- ⁽¹¹⁾ George Jefferson: "Cistern Puncture," *The Medical Annual*, 1929, page 102.
- ⁽¹²⁾ Harvey Cushing and W. T. Bovie: "Electrosurgery as an Aid to the Removal of Intracranial Tumours," *Surgery, Gynecology and Obstetrics*, December, 1928, page 751.
- ⁽¹³⁾ G. Holmes and P. Sargent: "Suprasellar Endotheliomata," *Brain*, Volume L, 1927, page 518.
- ⁽¹⁴⁾ F. E. B. Foley and T. J. Putman: "The Effect of Salt Injection on Cerebro-Spinal Fluid Pressure and Blood Volume," *American Journal of Physiology*, Volume LIII, 1920-1921, page 464.
- ⁽¹⁵⁾ P. Martin: *Archives Francobelges de Chirurgie*, Tome XXVI, page 807.
- ⁽¹⁶⁾ W. R. Bethea: "Intracranial Studies by Ventriculograms," *Radiology*, February, 1929, page 142.
- ⁽¹⁷⁾ E. R. Carpenter: "Encephalography, Lumbar Puncture and Trephine Methods," *American Journal of the Medical Sciences*, Volume CLXXIII, 1927, page 333.
- ⁽¹⁸⁾ J. N. Petersen: "Injection of Air by the Lumbar Route in Diagnosis and Treatment," *The Canadian Medical Association Journal*, August, 1928, page 751.
- ⁽¹⁹⁾ O. Foerster: "Encephalographische Erfahrungen," *Zeitschrift für die Gesamte Neurologie und Psychiatrie*, Februar, 1925, Seite 512.
- ⁽²⁰⁾ James Purves Stewart: "X Rays in the Localization of Cerebral and Spinal Tumours with Especial Reference to Ventriculography and Lipiodol Injections," *Proceedings of the Royal Society of Medicine*, August, 1924, page 60.
- ⁽²¹⁾ J. A. Sicard and J. Hugué: "Etude Critique de Quelques Méthodes de Localisation des Tumeurs Cérébrales: l'Encephalographie Lipiodolée Sino-Véineuse," *La Presse Médicale*, février 4, 1928, page 145.
- ⁽²²⁾ R. Wartenberg: "Encephalographische Erfahrungen," *Zeitschrift für Neurologie und Psychiatrie*, Februar, 1925, Seite 585.
- ⁽²³⁾ W. Penfield: "Chronic Meningeal Post-Traumatic Headache and Its Specific Treatment by Lumbar Insufflation: Encephalography," *Surgery, Gynecology and Obstetrics*, Volume XLV, 1927, page 747; "Cerebral Pneumography: Its Dangers and Uses," *Archives of Neurology and Psychiatry*, Volume XIII, 1925, page 58.
- ⁽²⁴⁾ W. E. Dandy: "A Method for the Localization of Brain Tumours," *Surgery, Gynecology and Obstetrics*, Volume XXXVI, 1923, page 641.
- ⁽²⁵⁾ E. D. Friedman: "Experiences with Encephalography via the Lumbar Route," *Bulletin of the New York Academy of Medicine*, Volume IV, April, 1928, page 503.

EPILEPSY.

By A. P. DERHAM, M.D., B.S. (Melbourne),
Honorary Physician to Out-Patients, Children's Hospital,
Carlton.

At a meeting of the Melbourne Pædiatric Society last year Dr. Guy Springthorpe and I demonstrated a series of nine patients suffering from epilepsy from my out-patient clinic and we added to the histories those of five other patients. The most important points are given in the summaries attached to this note. A rough classification has been attempted of the ætiological groups. It is interesting to find that in an unselected series of fourteen patients, three had fits of a localizing type, one certainly being caused by a cortical birth injury. Three others had a history strongly suggestive of epilepsy following and being due to cerebral concussion.

The fits in the six patients (1 to 6) were almost uniformly of the *grand mal* type. In the remaining eight patients the epilepsy has been classified as probably idiopathic; four were chiefly of the *grand mal* type and four of the *petit mal* type. The epilepsy in the second and third patients, although the fits were localizing, was probably idiopathic. In only three patients was there a definite family history of epilepsy, although statements of relatives in such matters are notoriously unreliable. A Wassermann test was carried out with the blood serum of eight patients and in none did the serum deviate complement.

The results of treatment are given in some detail. In every instance but one "Luminal" has been given in appropriate doses. In nearly every patient the treatment has been followed by improvement. The results seem to be superior to those obtained with other hypnotics tried. The only patient in whom "Luminal" failed signally, was suffering from Jacksonian fits due to a cortical blood cyst. The series has been taken at random and is not intended to serve the purpose of presenting a special case for "Luminal" therapy. Another important point, illustrated by the histories of the seventh and tenth patients, is that when children are treated for convulsions at intervals by different medical practitioners, the fact that the condition is true epilepsy is liable to be overlooked and the effective treatment may be postponed.

As far as drugs are concerned, bromides with or without chloral hydrate were given to almost every patient with doubtful benefit before "Luminal" was substituted or given in addition.

Case Histories.

Grand Mal with Localizing Signs.

1. The first patient is a boy, aged four years. He has been under observation for three and a half years. When

four months of age he had an attack of *grand mal* commencing in the right side of the face and the right arm and becoming general. The fits lasted a few seconds to a few minutes. He had from one to seven fits a day. At the age of ten months an operation was performed and a blood cyst was found in the motor area of the left cerebral cortex. The blood serum did not deviate complement in the Wassermann test. There were no abnormal neurological signs at any time, except immediately after a fit. At first the boy was in a mental condition compatible with his age and environment; later some mental deterioration was noted.

The aetiological factors are as follows. The child was born after a difficult forceps delivery. There was a depression of the left frontal bone and a localized cortical lesion causing epilepsy of the Jacksonian type. The epilepsy did not respond to any drug treatment. Chloral hydrate in full doses was tried. It was then determined to operate. The skull was trephined and decompression was carried out. The boy was then ten months of age. This was followed by some improvement. "Luminal" was then exhibited in large doses, up to 0.27 gramme (four and a half grains) daily. During this period the fits became more frequent, but they ceased completely for a few days after the "Luminal" was withdrawn. The fits have reappeared and occur now on an average once a day.

2. The second patient is a girl, aged one year and eleven months. She has been under observation for ten months. The fits began when she was thirteen months of age. They were of the character of *grand mal* and commenced on the right side of the face and in the right arm and became more or less generalized and were followed by paresis of the same areas; the paresis disappeared in an hour or two. She has had only two major attacks in five months. The child seems to be normal mentally. No abnormality has been detected on radiographic examination of the skull. There are no neurological signs other than the localized paresis following the fits. The blood serum failed to deviate complement in the Wassermann test. It is thought that there may have been a fronto-parietal birth injury, but the more probable explanation is that it is an idiopathic epilepsy with localizing signs. The treatment has consisted in the regulation of the diet and of the action of the bowels. The child was given 0.54 gramme (nine grains) of sodium bromide each day for four and a half months, during which time there were no fits. In February, 1929, one fit took place. The child has been given sodium bromide and 0.03 gramme (half of a grain) of "Luminal" three times a day. No further fits have taken place.

3. The third patient is a girl, thirteen years and four months of age. She has been under observation for four months. The epilepsy appeared as a *grand mal* at the age of three years. The fits began on the right side of the body and then became generalized. Between the ages of three and five years she had frequent attacks, up to thirty a week. This was followed by an interval of eight years. She then had a series of fits. Between the individual fits she did not regain consciousness. Her mother had had three miscarriages, but there was no history of epilepsy in the family. The child's blood serum did not deviate complement in the Wassermann test. She was apparently of normal mentality and was in the seventh grade at school. The epilepsy was probably idiopathic with localizing signs. The recurrence at puberty is interesting. She was treated with chloral hydrate and potassium bromide in usual doses. This treatment seemed to control the fits. She has since been given "Luminal" in 0.03 gramme (half grain) doses together with potassium bromide in 1.3 gramme (twenty grain) doses three times a day. For the last six weeks she has been given only 0.06 gramme (one grain) of "Luminal" twice a day. She has had no fits for nearly four months.

Grand Mal Following and Probably Due to Concussion.

4. A boy, aged fourteen years, has been under observation for six months. He has had *grand mal* since he was thirteen. The fits occur about once in every two weeks. One uncle and two aunts suffered from fits up to the age of twenty. A skiagram revealed an old trauma in the

region of the right fronto-parietal suture. The boy's mentality was apparently normal. He had a severe head injury with concussion at the age of six years before the onset of the fits. He was given potassium bromide in 1.8 gramme (thirty grain) doses, but no improvement followed. He was then given 0.06 gramme (one grain) of "Luminal." The result of this medication is not known.

5. The fifth patient is a boy, aged thirteen years. He has been under observation for ten months. The *grand mal* began at the age of eight years. The fits occur every few months. A skiagram revealed no evidence of fracture of the skull. The blood serum did not deviate complement in the Wassermann test. The child's mentality is very subnormal; his intelligence quotient is 70 and his mental age is nine years and nine months. One year before the onset of the epilepsy he fell on his forehead and suffered from concussion. He was given 0.06 gramme (one grain) of "Luminal" every morning and had no fits for four months. When this dose was given every second morning he had one fit. For the past four months he has had 0.03 gramme (half a grain) of "Luminal" each morning and has had only one fit during two days when his medication was stopped. A note in June, 1929, reveals that he is going on well and has had one attack of doubtful *petit mal* since.

6. The sixth patient is a boy, aged eleven years, who has been under observation for two and a half years. His epilepsy started when the boy was one and a half years. At first the seizures were of the type of *petit mal*, but later changed to *grand mal*. He had been free from September 22 until November 20, 1928, when he had thirteen fits in one day. The usual interval between the fits is a week. His blood serum did not deviate complement in the Wassermann test. His intelligence is fairly good, considering the lack of schooling. At the age of eighteen months he fell on his head; a convulsion followed. He was given bromides and chloral hydrate at first with little effect. He was then given 0.06 gramme (one grain) of "Luminal" every night and morning and considerable improvement followed. He was free from fits for several weeks at a time, but he had four fits during one week-end while he was without his "Luminal." He was then free from fits for two months, but following this period he had thirteen fits in one day. From a note taken in June, 1929, it is recorded that the patient was still taking "Luminal." He had bouts of fits occasionally with intervals of weeks or months.

Idiopathic Epilepsy of Grand Mal Type.

7. The seventh patient is a male, aged four years. He has been under observation not continuously for two and a quarter years. His fits started at the age of one year and ten months. They take the form of *grand mal* with more or less complete loss of consciousness for about a half an hour. The intervals between the fits have varied from one week to several months. The treatment consisted in giving 0.03 gramme (half of a grain) of "Luminal" every night and morning. The late results are not known.

8. The next patient is a boy, aged five years, who has been under observation for eight months. His fits started when he was two years of age. The attacks have the type of *grand mal*. He had several fits in one day at first and was then free from attacks for about one year. For six months before admission he had about one fit a month. The patient's serum did not deviate complement in the Wassermann test. There is mental deficiency. The child is backward in walking and in talking. The treatment consisted in giving chloral hydrate and potassium bromide with 0.06 gramme (one grain) of "Luminal" three times a day. He is now having 0.06 gramme of "Luminal" every night and morning. He has had no fit for eight months.

Idiopathic Epilepsy of Grand Mal and Petit Mal Types.

9. The ninth patient is a boy, aged fourteen and a half years, who has been under observation for eight and a half years. His fits appeared when he was three and a half years of age. At first they were of the *petit mal* type, but later became of the *grand mal* type. During the early stage they were irregular and appeared after intervals

of about six months; then as many as ten fits occurred in six days. Later there has been about one fit a day. The patient's aunt had fits up to the age of fourteen, a cousin up to the age of twenty. His brother has had two fits. A skiagram of the skull did not disclose any abnormality. The blood serum failed to deviate complement in the Wassermann test. The boy is somewhat backward. He speaks and behaves rather childishly. At first he was given 1.15 grammes (eighteen grains) of mixed bromides each day; little improvement was noted. Then he was given 0.06 gramme (one grain) of "Luminal" twice a day; there was still no improvement. The daily dose of "Luminal" was gradually increased to 0.39 gramme (five grains) with considerable improvement during the past two years. He has had only two or three fits a month and is able to earn his living or to contribute towards it.

Idiopathic Epilepsy of Petit Mal Type.

10. The tenth patient is a girl, aged eight years and three months. She has been under observation for seven years. Her epilepsy started when she was one year and two months old. She has "convulsions" varying from *petit mal* to repeated *grand mal*. She has had very few fits since she has been taking "Luminal." At first the fits took place every few months; then they became very frequent; as many as forty-two have occurred in two days. She was in an epileptic colony for some years, but was discharged because she was mentally defective. She is said to have developed normally until the fits began. She is now an imbecile, possibly mental deterioration associated with epilepsy. In 1924 she was first given chloral hydrate and potassium bromide without success. She was then transferred to the epileptic colony and was there given three bromides and "Luminal" without success. For the past ten months she has had "Luminal" in doses of 0.06 gramme (one grain) three times a day. There has been a considerable improvement. She has had one fit in about two months and none for six weeks.

11. The eleventh patient is a girl, aged four and a half years, who has been under observation for nine months. Her fits began when she was three years of age. The type is *petit mal*. She has from two to twenty fits a day. She is apparently of normal mentality. Treatment began with rhubarb and soda mixture with 0.97 gramme (fifteen grains) a day of bromides and 0.03 (half of a grain) of "Luminal" each night and morning. The dose of "Luminal" has gradually been increased to 0.06 gramme (one grain) three times a day with progressive improvement as the dose has been increased. During the past eight weeks she has had only one or two fits a week.

12. A female patient, aged ten years and four months, has been under observation for six months. She has had *petit mal* since she was one year of age. The fits occur once or twice a week. Since treatment has begun they occur once in a month or six weeks. The girl has gonococcal vaginitis, probably an old infection, dental sepsis, constipation and has been fed on an excessive carbohydrate diet. Her mentality is apparently normal. The treatment commenced with attention to the diet, action of the bowels and teeth. She was then given 0.486 gramme (seven and a half grains) of potassium bromide three times a day with definite improvement. No "Luminal" has been given so far.

13. The patient is a girl, aged one year, who has been under observation for two months. She has had *petit mal* since she was seven months of age. At first the fits occurred once a week; later one to three fits have taken place each day. A skiagram of the skull does not reveal any abnormality. The circumference of the head is only 44.5 centimetres (seventeen and a half inches). The child seems to be intelligent, but is abnormally excitable. The mother was a *primipara* and was in labour for twenty-four hours; the labour was terminated by forceps delivery. Treatment was commenced with 0.015 gramme (a quarter of a grain) of "Luminal" three times a day. As no improvement followed and the fits continued twice or three times a day, she has been given 0.03 gramme (half of a grain) of "Luminal" twice a day with apparent improvement. She has had no bad fits for six weeks and no fits at all for ten days.

14. The last patient is a boy, aged nine and a half years. He has been under observation for nearly two years. The *petit mal* started when he was six and a half years of age. He had only one attack before he came to the hospital. His mother had been treated for suspected syphilis before the boy was born. The father, a returned soldier, is said to have had fits in Egypt. The patient's blood serum did not deviate complement in the Wassermann test. He appears to be mentally normal. Treatment commenced with attention to the diet and action of the bowels. He was then given 0.06 gramme (one grain) of "Luminal" after breakfast each day for one month. He has been without further treatment, as he has had no more fits.

COMMON RESPIRATORY AFFECTIONS IN CHILDREN.¹

By F. KINGSLEY NORRIS, M.D.,

Honorary Physician, Children's Department, The Alfred Hospital, Melbourne.

THIS afternoon I thought we might briefly discuss some personal experiences in a few of the common respiratory conditions encountered in children. If my remarks appear elementary, please pardon my simplicity, but I understand that you would rather hear of the common conditions than listen to an erudite discourse on medical rarities. For convenience I have divided the subject into three groups: (i) Conditions in the newborn, (ii) conditions in infants, (iii) conditions in children.

Conditions in the Newborn.

In the first group I have selected atelectasis as our most common respiratory problem. In the full-time, normally delivered baby any gross degree of atelectasis must be rare, but when we remember that coordination of higher function even in a full-time baby in many respects is in abeyance, it is not to be wondered at that in a premature baby such a primitive function as respiration may be inadequate, in addition to the feebleness of the respiratory and general musculature.

What are the indications of atelectasis? The feeble or absent cry, the subnormal temperature, the general pallor of the skin with a varying mild cyanosis of the face and extremities, more pronounced with any effort such as swallowing, occasional momentary twitchings, the limited movement of part of the chest wall, the lower ribs tending to sink inwards, perhaps some dullness towards the base and almost certainly areas of diminished air entry. Wherein lies the difficulty in diagnosis? Generally in the distinction between this condition, intracranial injury and congenital heart disease. Be very cautious of diagnosing uncomplicated atelectasis as the cause of serious trouble in a full-time baby; do not forget that atelectasis may be the result of some grave non-respiratory lesion. With a cerebral injury the general manifestations are those of irritation, convulsions and a bulging

¹A post-graduate lecture delivered under the auspices of the Melbourne Permanent Committee for Post-Graduate Work, August, 1929.

fontanel; with a subtentorial lesion a very similar picture to atelectasis may appear, a pale apathetic baby with irregular respirations and difficulty in feeding. In the absence of any lung signs lumbar puncture may be indicated. Urgent or constant cyanosis would suggest rather the presence of *liquor amnii* or mucus in the respiratory passages or a congenital heart lesion, even in the absence of any detectable murmur. Most babies with mild atelectasis, if otherwise healthy, will do well with bodily warmth and careful stimulation. In uncomplicated atelectasis, if the baby is alive at the end of a week, it will almost certainly do well.

There is one condition in the new-born baby which is often mistaken for a pulmonary affection. The picture is that of a baby two or three days old, restless, feverish, flushed and breathing rapidly; at first sight it is suffering from a typical pneumonia, but examination of the lungs reveals no abnormality. These babies are the victims of inanition or dehydration fever. For the first few days, if the fluid intake is insufficient, the loss of water by the skin, bowels and other excretory organs is uncompensated. This in itself, as Bakwin's work has shown, can produce such a disturbance. As a rule the condition responds within a few hours to the free oral administration of 5% glucose in saline solution.

Conditions in Infants.

In infants the most common respiratory affection is a naso-pharyngitis, but we are seldom consulted until one or more of its many sequelæ have developed. The extensions of a naso-pharyngitis may be very serious and we should, if possible, prevent them arising. I know of no more effective method than the instillation into the conjunctival sac three times a day of a 10% solution of argyrol. Dropped directly into the nasal cavity, it is promptly blown out, but from the tear duct the solution suffuses from the inferior meatus round the naso-pharynx in a soothing and efficient manner. Of course, if the tear ducts are blocked, this procedure fails. Most of the nutritional disorders in infants are accompanied by some degree of infection in the upper respiratory passages and it has been our practice to submit any baby suffering from such disorder to this routine treatment. Our incidence of *otitis media* and bronchopneumonia has appeared to be definitely reduced in these infants. Of the sequelæ *otitis media* is frequent. Always carry in your bag an auroscope when called to see a baby and be sure you obtain a satisfactory sight of the ear drums. *Otitis media* and pyelitis are two of the most common causes of unexplained fever in children. Ears can be most humiliating. We are obsessed with the idea that obvious pain must accompany an acute otitis. In children this is not always so, and be guarded against passing an ear drum that is just a little dulled, not red nor bulging, as a mild catarrh that will give no trouble. How often have we been rung up within a few hours of leaving such a patient to hear that "the ear is discharging such a lot, doctor." *Glycerinum acidi carbolicum* seems of

value in the preperforated stage with or without pain. Once discharge has occurred, we clean the meatus well with equal parts of hydrogen peroxide and warm water; swab out well and leave in the passage three or four drops of a one in five hundred aqueous solution of mercurochrome. Warn the people of the colour of the dye. I have been rung up with the news that "the ear is bleeding, doctor." The question of paracentesis must be decided in each individual case. If there is fever and a bulging drum associated with pain, we operate; if no pain is present, we hold our hand for twenty-four hours, then if the temperature is still raised, even in the absence of pain, we incise the drum.

In those snorty, snuffly babies who have difficulty in swallowing or who have suffered from an obstinate otorrhœa, gently pass your finger into the naso-pharynx and feel for a pad of adenoids. Do not be afraid to curette adenoid vegetations under an anæsthetic in a baby of six months of age. Do not touch the tonsils, but with a small curette and a piece of gauze on the finger we can often terminate weeks or months of trouble. A mild unrecognized naso-pharyngitis is often the source of an alarming cervical adenitis. Do not be in a hurry to diagnose these glands as tuberculous and do not hasten to open them. The argyrol eye drops, ten minims of *syrupi ferri iodidi* every four hours, together with frequent applications of "Antiphlogistine," will often disperse a mass of glands that seems inevitably to need incision. One rarely recognized complication is a retro-pharyngeal abscess. There are two fair sized lymphatic glands in the retro-pharyngeal space, one on each side of the mid-line; they drain the pharyngeal area and in children acute suppuration is occasionally encountered. Swallowing is difficult and painful, the neck is stiff with the head generally held to one side, there is a pharyngeal rattle, with a smothered nasal cry and sometimes stridor. With a good light there may be seen a red œdematous swelling, generally to one side of the posterior part of the pharynx, resembling a quinsy, but quinsy is extremely rare in children. The suspected area should be palpated; if a boggy, bulging, fluctuant area is felt, it should be opened into the mouth under light anæsthesia with the head dependent. Having opened the swelling, pass your finger well into and around the cavity. In dealing with infants and young children we are frequently faced with the problem of a chronic unilateral discharge from the nose. A bacteriological investigation should always be carried out to eliminate diphtheria which is suggested if the discharge is blood stained and associated with excoriation round the nostril. If the discharge is offensive, we are almost certainly dealing with a foreign body in the nasal passages. It is surprising what strange objects are packed up youngsters' noses. Beads, rolls of paper, slate pencils and boot buttons. It may be a survival of the secretive instinct. Someone has suggested giving these children pockets, but I think that if we remove the foreign body without an anæsthetic, if possible, the

resultant pain and discomfort act as a strong deterrent to future impulses.

Conditions in Children.

In children I have selected the condition generally known as lobar pneumonia. The clinical and pathological distinction between lobar pneumonia and bronchopneumonia is not so easily determined as our text books would suggest. The differentiation can be made with certainty only at autopsy. In lobar pneumonia quite frequently only portion of a lobe is involved and often an area of consolidation involves portion of more than one lobe. Recent work by Coryllos possibly indicates that the first pathological change in lobar pneumonia may be in the nature of an atelectasis. The suggested term, alveolar pneumonia, is pathologically reasonable, but to avoid confusion I will use the older term, lobar pneumonia. Lobar pneumonia in children does not always appear with the dramatic suddenness of the adult condition; a mild cold may precede the condition for some days. Thoracic pain is not usual with pneumonia in a child, while abdominal pain is fairly common. Herpetic eruptions are the exception and rusty sputum is rarely seen. The diagnosis of pneumonia may often be made without disturbing the child. The flushed face and often the flushing is more pronounced on the side corresponding to the consolidation, the dilating *alæ nasæ* and the rapid shallow grunting but not obstructed breathing with the pause after inspiration are characteristic. In contrast to bronchopneumonia, the cough is not a prominent feature. We may feel confident that we are dealing with a pneumonia, but when we endeavour to locate the lesion, our confidence is often shaken. X ray examinations have shown that the consolidation often commences at the periphery of the lung. This fact may be appreciated only if films are taken in both directions. A thin, small area of consolidation may not extend centrally as far as the larger tubes; consequently there is no conduction of the sounds directly from these larger tubes and in the early stages tubular or bronchial breathing may not be heard. I have known a patient in whom tubular breathing was not heard until three days after the crisis. Crying is often of value; over a small patch of consolidation the cry seems to come through the stethoscope right up to our ears. With children the temperature tends to swing rather than to follow the plateau of adults, often reaching its highest point within twenty-four hours of a crisis. The earliest auscultatory changes are brought about by an attempt to limit the respiratory movements of the area involved together with a diminished area of aeration. In an apical pneumonia this muscular rigidity can often be appreciated by palpating the deep muscles of the neck, the *scaleni* attached to the upper ribs are often relatively more tense on the side corresponding to the condition, Lesné's sign. The air entry in a child's chest is normally so good and, compared with that of an adult, slightly raised in pitch that this slight damping of the breath sounds on the affected

side, bringing about a vesicular murmur that more nearly approaches that in an adult, often misleads to a diagnosis of pneumonia in the sound side, a very common error that I suppose all of us have made.

What considerations will guide us in our prognosis? As regards life, we know that children as a rule weather a lobar pneumonia very well. How long will the acute illness last? Avoid trying to foretell the day of crisis. It is not always easy to determine when the condition commenced. Often a pneumonia will subside within twenty-four or forty-eight hours of our first visit, although the physical signs may have suggested a very early consolidation. Again, lobar pneumonia in children is often not accompanied by crisis at all, but subsides more gradually. Then there is the fairly common migratory type that wanders from lobe to lobe, sometimes without any intermission in temperature. I know of nothing that will suggest with which type we are dealing, except that the higher the temperature and the more ill the child seems early in the condition, the more likely are we to have a satisfactory crisis. Similar types appear together. At present we are passing through a wave of severe pneumonia associated with high temperatures and satisfactory crises. A few months ago the patients were running temperatures for three or four weeks and so it goes on. Pneumonia seems to come in waves and in children one attack would seem to predispose to subsequent attacks. As a matter of interest I have endeavoured to correlate the type of organism with the clinical type. It is a matter of great practical difficulty to obtain lung sputum in these cases; pharyngeal sputum is not necessarily of pulmonary origin. I have used the method of lung puncture in a small series.

One cubic centimetre of sterile saline solution is drawn into the barrel of a small "Record" syringe, the needle is plunged into the area of consolidation, the piston depressed and after a few seconds withdrawn. The resultant blood stained fluid is squirted on to the medium and incubated. Our series has been far too small to afford conclusive deduction, but it would appear that Type I pneumococcus tends to be associated with a severe high temperature and short course, Types II and IV with the more prolonged course.

Pneumonia in children kills as a result of the generalized toxæmia as manifested by medullary disturbances or by the complication of dissemination. The highly coloured or even cyanosed patients seldom go wrong, but pallor is ominous. Another prognostic manifestation of the severity of the toxæmia is distension. Each time we see our pneumonia patients, the first thing we do is palpate the abdomen. Beware of persistent distension. While vomiting at the onset of a pneumonia is generally of no consequence, vomiting in the course of the condition may be of grave significance. Persistent restlessness and difficulty in feeding are also very serious.

What can we do for these patients? First and foremost always insist either on having a nurse in the home or on having the patient in a hospital. The continued strain of day and night attention in addition to the great mental distress precludes a parent from giving adequate attention to the child and all of us will behave better with strangers than with our own people. Do not be afraid of fresh air, but do not be a crank. Cold, damp air is most irritating to an inflamed respiratory tract. Raising the body temperature is a certain method of lowering the ability to digest and assimilate food. Nature takes care of this to a certain extent by providing an anorexia, but diarrhoea is a common accompaniment of pneumonia in children. This can usually be overcome by some form of predigestion of the food, as with Benger's preparation. Be liberal with fluids and remember that to a child something out of a cordial bottle is always alluring; many children will drink copiously of raspberry vinegar or lime juice when plain water is neglected. Avoid the effervescent drinks, as these may bring about embarrassing distension. Plain boiled sweets and chewing gum often add to their comfort and ice cream is a useful food.

Medicinally we use nothing as a routine. In private practice, if a mixture seems expedient, a small dose of *liquor ammonii acetatis* coloured with *tinctura cardamomi composita* and flavoured with glycerin can do no harm. We feel that citrates and the liquefying expectorants in efficient doses may add to the distress, as small children have difficulty in getting rid of sputum. I have seen cyanosis disappear when these mixtures have been discontinued. Some stimulant should always be on hand; in mild distress brandy, well diluted and sweetened, seems to give rapidly good results, but if there is no improvement in twenty-four hours, it can be discontinued. In some cases it would seem to cause gastric irritation and vomiting. In the severely toxæmic infections we use nothing but aseptic ergot hypodermically three times a day or every four hours. It seems to hold the patients together better than anything else we have tried. On two occasions we have given an intraperitoneal injection of saline solution with excellent results. For the restlessness a mustard pack is often successful. Locally mustard pastes are applied three times a day if the disturbance is not detrimental, but always remember that you are treating a sick child, not a condition. We have used diathermy every day in a series of cases of acute pneumonia, but our results were not encouraging and our incidence of empyema was higher than usual.

Conclusion.

These, then, are a few of our experiences with common respiratory conditions. It was my misfortune as a student to learn very little of these things. For this reason I have presented a rambling collection of personal difficulties rather than a compilation from books in the hope that a few of my remarks may be of useful interest.

DIVERTICULITIS.

By J. G. EDWARDS, M.B., Ch.M. (Sydney),
Honorary Radiologist, Sydney Hospital.

DIVERTICULITIS is becoming more frequently diagnosed as a cause of lower abdominal symptoms since the introduction of the barium enema in the examination of the distal part of the colon.

Diverticula may occur in any part of the alimentary tract; they are rare in the stomach and small intestine, but are common in the large intestine, more especially in the sigmoid colon. It is in this region that they most frequently cause symptoms.

Diverticulitis usually occurs in middle life and in well nourished males. Discomfort rather than actual pain is complained of and this occurs below and to the left of the umbilicus and in the left iliac fossa.

Tenderness is noticed on deep palpation in the left iliac fossa and at times a tender tumour may be palpated. Constipation is more usual than diarrhoea, but, as in carcinoma of the large bowel, alternating constipation and diarrhoea are met with. Blood in the motions is frequently seen. When surrounding inflammation is present, there may be frequency of micturition.

Perforation of a diverticulum is a grave and dangerous complication. It is difficult to localize the site of lesion and the condition is almost always fatal. Even at operation it is difficult to find the site of perforation. Operative removal of a section of colon affected by diverticulitis is difficult owing to the extent of colon involved and to the unhealthy condition of the colon above and below the lesion. A single diverticulum may be easily removed, but operative results for multiple diverticula are bad. Malignant disease frequently complicates this condition.

For diagnosis an opaque enema examination is necessary. The enema recommended is made up as follows: Barium sulphate 150 grammes (five ounces) and powdered gum acacia 120 grammes (four ounces), mix to a smooth paste with water and add warm water gradually to make 1,200 cubic centimetres (two pints).

This enema is administered slowly from a gravity can, the patient being instructed to breathe slowly through the mouth and not to hold his breath. The flow of the enema is watched on the fluorescent screen and when the site of lesion is reached, it will be found that the smooth outline of the bowel becomes lost and that a greater or lesser length of colon is ragged and irregular in outline and possibly small nodular diverticula may be seen outside the general lumen. No amount of palpation will cause this irregularity to disappear; it is constant.

At times a spasm of the bowel will empty the affected section, showing that the affected portion is in a very irritable state.

When a carcinoma is present a constant filling defect will be noted and possibly a tumour will be felt on palpation.

The accompanying skiagrams illustrate the appearances of these conditions.

Figure I illustrates multiple diverticula of descending and sigmoid colon.

Figure II illustrates diverticulitis of the sigmoid colon associated with an enlarged and adherent appendix.

Figures III and IV illustrate diverticulitis of the sigmoid colon with the arrow pointing to the defect caused by the presence of an adeno-carcinoma.

Reports of Cases.

RODENT ULCER DUE TO TRAUMA.

By NORMAN PAUL, M.B., Ch.M. (Sydney),
Honorary Dermatologist, Sydney Hospital; Honorary
Dermatologist, Royal Alexandra Hospital for
Children, Sydney.

Of the causative factors in the production of basal cell epitheliomata trauma plays a part which is not inconspicuous. From time to time rodent ulcers are seen which have indubitably arisen from injury, and occasionally some striking examples are seen. As the history of the patient has to be accepted in these cases, credence should be given only where the statements seem reliable and not to indefinite histories. Such statements that the growth has arisen from a pimple or a mole mean nothing, as they probably represent the early stage of the growth. Sometimes, however, one has definite evidence, as shown by later clinical appearances, of verifying the patient's statements. At a recent meeting of the New South Wales Branch of the British Medical Association held at the Sydney Hospital, I showed two patients with rodent ulcer due to injury, photographs of whom are here reproduced.

CASE I.—A female, aged fifty-six, had on her forehead a rodent ulcer of a remarkable shape, that of a triangle. The history given was that the patient was removing a frock over her head in which there was a pin that she had not noticed. Whilst passing over her forehead this produced a scratch with its maximum effect where it first touched the skin and represented by the base of the triangle (see Figure I).

CASE II.—In this woman there is also a rodent ulcer of the forehead of a long and irregular shape. The history was that the patient tripped and fell against the handle of a saucepan, removing the skin along an area now represented by the rodent ulcer. The photographs represent the condition before and after treatment by radium (see Figures II and III).

From their shape and configuration, together with their history, I think there is not any doubt but that injury has been the causative factor of these two ulcers. At the present time I have a patient under treatment with a large rodent ulcer of the back of many years' duration. This was produced by his being washed against the rocks whilst swimming.

Quite a few patients state that their rodent ulcers have followed the pressing out of blackheads. The splashing of hot fat in cooking has been attributed by patients as a causative factor and I recently saw a man with multiple rodent ulcers who was occupied in asphaltting and top-dressing the roads with tar. He was being freely splashed with hot tar and I am of the opinion that this was the cause in his case. Another patient recently attending had a basal cell epithelioma of the finger due to a bite from a kookaburra.

With the object of getting a comparative estimate on this subject, I investigated the last seventy-five patients with rodent ulcer seen by me in the Radium Department of the Sydney Hospital. At the same time I also took a note of those patients with solar keratoses, to get an idea of the

ratio of those showing the effect of the actinic rays. The accompanying table is a *résumé* of that investigation.

The series of cases recorded in the table would confirm my previous opinion and indicate that a certain proportion

TABLE SHOWING DETAILS OF SEVENTY-FIVE RODENT ULCERS.

Sex of Patient.	Age.	Keratoses.	Attributed Cause (Patient) and Remarks.
Female	54	None.	None.
Male	73	None.	Injury at site of lesion two years ago.
Female	45	Few, indefinite.	Attributes it to a mosquito bite.
Female	57	One only.	None.
Male	44	None.	None. Multiple rodent ulcers.
Male	42	None.	None.
Female	58	Few.	None.
Female	34	None.	None.
Male	60	Numerous.	(Sunlight probably the cause.) Multiple rodent ulcers.
Female	60	Numerous.	(Sunlight probably the cause.) Multiple rodent ulcers.
Male	65	None.	None.
Male	74	None.	None.
Female	55	None.	None.
Female	44	Has a keratosis developing into a rodent ulcer.	None.
Male	34	None.	None.
Male	36	None.	None.
Male	65	None.	None.
Male	26	Keratoses, and atypical basal cell epitheliomata.	Has a fair skin, and comes from Queensland.
Female	63	Few, slight.	None.
Male	32	None.	None.
Female	64	None.	None.
Female	64	Few, slight.	None.
Male	31	None.	None.
Male	55	None.	None.
Male	60	None.	None. Multiple rodent ulcers.
Male	68	Some dorsum hands only.	Has atypical basal cell epithelioma and cutaneous horn.
Female	56	None.	History of a scratch from a pigeon.
Male	75	None.	An Italian. Has multiple rodent ulcers.
Female	86	Few, slight.	None.
Male	44	None.	None.
Male	69	None.	Started as a pimple and cut in shaving.
Male	67	None.	None.
Male	83	Few.	None.
Male	92	None.	Hit with a bicycle eight years ago.
Female	74	None.	None.
Female	28	None.	Started from pressing out a blackhead on the nose.
Female	48	One only.	None.
Male	72	None.	Injured with a piece of coal.
Male	45	None.	None.
Male	56	None.	None.
Male	69	None.	None.
Female	49	None.	None.
Female	56	One. (Case I.)	Scratch from a pin.
Female	72	None.	None.
Male	75	None.	None.
Male	56	None.	Thinks it started from a cut in shaving.
Male	54	None.	None.
Male	65	None.	None.
Female	72	Numerous.	Has both a rodent ulcer and epithelioma.
Female	70	None.	None.
Male	77	None.	None.
Female	65	None.	None.
Female	49	None.	None.
Male	71	None.	Thinks started from a mole.
Female	58	Some.	Injured whilst galloping after cattle by a branch of a tree.
Male	47	None.	Started as a scaly spot.
Male	76	None.	None. Multiple rodent ulcers.
Male	64	None.	None.
Female	76	Few, slight.	Started as a mole.
Female	50	None.	None.
Male	52	Present.	None.
Male	37	Present forehead.	None.
Male	66	Numerous.	Injured with a stick, and skin was removed.
Female	60	Present.	None.
Male	52	None.	None.
Male	22	None.	Due to an injury at fourteen, was later excised and healed and then broke out again at seventeen or eighteen.
Male	46	None.	Started from pressing out a blackhead.
Male	26	None.	None.
Female	52	None.	None.
Male	28	None.	None. Started at nineteen.
Male	48	None.	Started after a fall from a horse.
Female	53	None.	None.
Male	63	None.	Indefinite history of injury.
Male	59	None.	None.

of cases of basal cell epitheliomata is due to trauma and a certain proportion to the actinic rays of the sun. In the majority no cause can be assigned. These ulcers are to be regarded as naevoid growths, due to embryonic residues which are at a later period of life stimulated to activity.

Bibliography.

Norman Paul: "The Influence of Sunlight in the Production of Cancer of the Skin," 1918.

J. Burton Cleland and Norman Paul: "Rodent Ulcers and Allied Growths," THE MEDICAL JOURNAL OF AUSTRALIA, May 1, 1920, page 407.

Norman Paul: "Observations on the Origin, Causation and Treatment of Rodent Ulcer," THE MEDICAL JOURNAL OF AUSTRALIA, January 27, 1923, page 85.

Norman Paul and Keith Inglis: "Pagetoid or Erythematoid Basal Cell Epithelioma," THE MEDICAL JOURNAL OF AUSTRALIA, October 20, 1923, page 412.

Reviews.

A TEXT BOOK ON OBSTETRICS.

"TWEEDY'S PRACTICAL OBSTETRICS" occupies a high position amongst British text books and the sixth edition, edited and largely rewritten by Bethel Solomons, worthily upholds the prestige.¹ While we are not in absolute agreement with all the author's views, we can heartily recommend the book as a valuable one which every one can study with profit. The main consideration is the "Rotunda" treatment, although other opinions are mentioned and discussed. The size has been increased and many new illustrations added. The book is divided into eight parts.

In Part I, dealing with the reproductive organs and general embryology, Professor Bronté Gatenby gives a good concise account of the present state of knowledge of human embryology.

In Part II, on normal pregnancy, labour and the puerperium, the value of antenatal care is stressed. Many will prefer the teaching of the Edinburgh school regarding the definition and the description of the presentations and positions to that given by the author.

In Part III, devoted to abnormal pregnancy, it is seen that the views of the author on eclampsia have not changed and the treatment is practically the same. Accidental hæmorrhage is treated differently and vaginal plugging as a routine is not adopted. The present treatment consists first in treating the collapse by submammary saline solution injections and pituitary extract 0.25 mil every half hour until one cubic centimetre has been given; secondly, in rupture of the membranes; thirdly, in the application of a tight abdominal binder. Vaginal plugging is used only if the bleeding persists. No mortality has occurred with this treatment in the last two years. Cæsarean section has been discontinued because of unfavourable results.

Placenta prævia is treated by bipolar version and bringing down a leg or by Willett's scalp traction or vaginal plugging if the cervix is undilated. Cæsarean section is used in a few selected cases. The author recommends curettage of the uterus of all patients two months after the occurrence of *placenta prævia*.

Part IV is devoted to abnormal labour. In breech presentations the chief danger to the child is asphyxia from pressure on the cord. Holland showed that 75% of fetal deaths were caused by cerebral damage from tearing of the *falx cerebri et cetera* from too rapid delivery of the head and only 25% from asphyxia. We think that more stress might be laid on these points and the necessity for careful, cautious delivery of the head emphasized. External version is said to be of little use before the thirty-sixth week, because the breech presentation frequently recurs. Our experience differs.

The chapter on uterine inertia has been completely rewritten and a new classification suggested.

In disproportion a full description is given of pelvimetry and Skutch's pelvimeter has proved useful. The treatment has been altered and a trial labour adopted.

In Part V the author considers the abnormal puerperium. The treatment of puerperal fever has been altered. Douching is not advocated for sapræmia as in the former editions, but Solomons adds: "We believe we douched too often formerly, but there is a tendency to allow the pendulum to swing too far in the opposite direction and to forget that sometimes an intrauterine douche is a very valuable proceeding"—an opinion which we share.

Colossal iodine, twenty cubic centimetres, given by the intravenous route, is extensively used. Large doses of antistreptococcal serum or puerperal antitoxin are given if the iodine is not effecting a cure. The curette is not used and intrauterine douches are given only after the fifth day, if there is any evidence of retained secundines. Autogenous vaccines are used. Lack of space prevents mention of many details which many might feel disposed to criticize.

Part VI is devoted to obstetric operations. Barnes's forceps with Neville's axis tractor are preferred and the pelvic method of application. Preliminary ironing out of the vagina is recommended. Kielland's forceps are not recommended because most of the fœtuses on which they are used, while the head is high, would come through by the natural efforts of the patient and the author believes that the use of these forceps will encourage meddling midwifery and the application of forceps before the conditions for their application are fulfilled.

The classical Cæsarean section is restricted to patients with absolute indications and the operation should be performed at a selected time. The lower segment operation is reserved for patients with relative indications and the author states that for the performance of a satisfactory lower segment operation there must be a good labour.

Part VII is devoted to the infant and Part VIII to various statistics, charts, pregnancy tests and the use of X rays in obstetrics.

THE MOTT MEMORIAL VOLUME.

A VOLUME entitled "Contributions to Psychiatry, Neurology and Sociology" is dedicated to the late Sir Frederick Mott and consists of a series of scientific papers specially written in his honour by a number of colleagues, friends and pupils.¹ The subjects comprise the anatomy, physiology and pathology of the nervous system, psychology, psychotherapeutics, sociology and even phonology, which at once makes it apparent that "this splendid man," as von Monakow aptly calls him, both possessed himself and succeeded in stirring up in others a wide range of interests. The book contains no less than thirty-one papers and to give an idea of the calibre of the contributors we need only mention the names of such masters as Sir E. Sharpey Schafer, Sir Hubert Bond, G. Elliot Smith, Ariëns Kapper, C. von Monakow and S. Ely Jelliffe. The number of the papers and the variety of subjects discussed must make it plain that any desirous of improving their acquaintance with modern problems of neurology and psychiatry will not open the book without finding profitable reading within its covers. Appropriately the volume opens with some charming personal recollections of Mott told by his old friend Professor Halliburton and impressively it ends with a cordial tribute of respect from Professor C. von Monakow, of Zurich. Mott's whole medical life was devoted to research. Some of his busiest years were spent in producing comparable work, the neurological archives of Claybury. Accordingly there could not be a more satisfying memorial to his name than this volume and it is most fitting that it has been inspired by and published under the ægis of the Royal Medico-Psychological Association whose acting president he was at the time of his death.

¹ "Tweedy's Practical Obstetrics," Edited and largely rewritten by Bethel Solomons, M.D., F.R.C.P., M.R.I.A.; Sixth Edition; 1929. Oxford University Press; Sydney: Angus and Robertson, Limited. Demy 8vo., pp. 780, with illustrations. Price: 30s. net.

¹ "Contributions to Psychiatry, Neurology and Sociology," Dedicated to the Late Sir Frederick Mott, K.B.E., Hon. LL.D., M.D., F.R.C.P., F.R.S., by his colleagues, friends and former pupils, Edited on behalf of The Mott Memorial Committee by J. R. Lord, C.B.E., M.D., F.R.C.P.E.; with an Appreciation by W. D. Halliburton, M.D., F.R.C.P., F.R.S.; 1929. London: H. K. Lewis and Company, Limited. Super Royal 8vo., pp. 415, with illustrations. Price: 21s. net.

The Medical Journal of Australia

SATURDAY, DECEMBER 7, 1929.

The Journal and the Branches.

DURING the last ten years the number of scientific meetings of the Branches of the British Medical Association in Australia has increased very greatly. Apart from the ordinary monthly meetings that have been held for many years, some of the Branches have added clinical meetings at public hospitals. In addition sections for the study of special branches of medical science have been instituted in the larger Branches and these sections hold meetings. From time to time special meetings are held. It will thus be recognized that the amount of matter submitted for publication to THE MEDICAL JOURNAL OF AUSTRALIA by the six Branches is becoming formidable. When the Australasian Medical Publishing Company, Limited, was formed, it was provided in the memorandum of association that the objects of the company should include among other things the publication of a journal which would be the official organ of the Branches of the British Medical Association in Australia. All the Branches accepted the constitution of the company and each Branch has appointed three members to be members of the company.

Ever since its establishment in 1914 THE MEDICAL JOURNAL OF AUSTRALIA has recognized its obligation to the Branches. Space is found for the publication of all papers read at meetings of the Branches and of the discussions on these papers. The journal, however, has functions other than those associated with the recording of the proceedings of the Branches. It is the medium for the conveyance of information on scientific matters and in consequence it is the proper channel for the publication of original work conducted by medical practitioners in Australia. When space is available, records of meetings of medical societies, either affiliated with

the Branches of the British Medical Association in Australia or independent of the Branches, are published. It is necessary to point out that when articles or reports are offered for publication in the ordinary way, their acceptance or refusal is determined by their didactic value to the general practitioner. No discretion is exercised in connexion with the papers read at Branch meetings. The fact that the journal is the official organ of the Branches implies that each party to the understanding undertakes to do all that is necessary to render the arrangement advantageous to the members of the medical profession throughout the Commonwealth. The Branches exercise care in the choice of papers read at the meetings; they select readers of papers and when the meetings are held, they transfer their proprietary rights over the papers to the journal. The journal provides machinery for the reporting of the discussions and publishes the papers and the discussions in the same issue. Since all the literary matter in the journal is copyright, the articles and the discussions automatically become the property of the journal. A complication has arisen from time to time when the reader of a paper refuses to hand over his paper either to the Branch officials or to the representative of the journal. In such circumstances the matter is in the hands of the Council of the Branch concerned. There is ample precedent to determine the proper procedure. When an author reads a communication at a meeting of a scientific society, either by invitation or on the acceptance of his offer, that paper becomes the property of the society and can be embodied in the transactions or proceedings of the society. In the circumstances set out above the Branch Council must determine for itself whether or not it will enforce its rights.

At times another complicating circumstance has taken place. A paper is read at a meeting and the paper or a substantial summary is handed to another journal or to the lay press for publication. If the handing of the article to another journal is done by the author, the Branch Council will probably take no action other than protesting and refusing to allow him to read another paper unless he agrees not to repeat his action. The fact that

a paper has been offered for publication in whole or in summary before it is handed to THE MEDICAL JOURNAL OF AUSTRALIA, precludes its publication in this journal. The journal can carry out its obligations to the Branches only when the Branches have carried out theirs.

In spite of the fact that THE MEDICAL JOURNAL OF AUSTRALIA is the official organ of the Branches of the British Medical Association in Australia, it has not been used as the channel of publication of the Transactions of the Australasian Medical Congress (British Medical Association), third session, Sydney, 1929. The transactions of the first and second sessions were published as supplements to this journal in 1924 and 1927. Members of the Branches who were unable to attend the third session in Sydney and who did not join the Congress, will not receive a copy. The wide distribution of the transactions of the previous sessions was much appreciated. The determination of the method of publication of the transactions of future sessions will be in the hands of each executive committee or of the Council of the Branch in the area of which the session will be held. The action of the executive committee of the third session is regrettable, particularly because this will render the decision more difficult in the future. We submit that since this journal is the official organ of the Branches, it should be used for the publication of the transactions of every session of the Australasian Medical Congress (British Medical Association), now that this organization has been taken over by the Branches of the British Medical Association in Australia and New Zealand. If financial difficulties arise, special expedients should be sought to overcome them. Where there's a will, there's a way.

Current Comment.

SURGERY OF THE OESOPHAGUS.

It is often stated and sometimes believed that surgery has reached the highest point in its development, that no further great advances can be expected and that new discoveries will be confined to instruments and devices which will facilitate surgical manipulations. This may be true as far as certain regions of the body are concerned, but

there are two regions in which some advance has recently been effected and in which further progress may be expected. These are the thorax and the cranial cavity. This has been made possible in the former by intratracheal methods of anaesthesia and in the latter by improved methods of diagnosis and technique. Of the structures in the thorax most difficulty has probably been experienced with the oesophagus. The chief reason for this is its inaccessibility, particularly in the intrathoracic portion. Even if this difficulty could be overcome, the absence of a serous covering makes suture difficult and the mediastinal space is so constituted that it is particularly susceptible to infection of a septic nature.

James H. Saint has recently undertaken some experimental work on animals in suture of the oesophagus and has at the same time made an extensive review of the efforts which have been made to place surgery of the oesophagus on a stable footing.¹ In dealing with the question of the slow progress and lack of success of oesophageal surgery, he lays stress on the poor blood supply of the oesophagus. Afferent vessels come from the aorta, the inferior thyroids, the subclavians, the left inferior phrenic and the left gastric artery. There is great danger in end-to-end anastomosis of the oesophagus of constriction of the blood vessels by sutures. This gives rise to necrosis, perforation of the wall and leakage of the contents. The loosening of the oesophagus in its bed prior to resection necessarily destroys some of the blood vessels and as a result there will be some interference with the cut ends of the tube. In this way necrosis may also be brought about. Saint also points out that the vagi are always involved if carcinoma extends through the oesophageal wall and that interference with them plays a great part in bringing about shock which so often proves fatal. In his review of the advance of surgery of the oesophagus he describes in full the various oesophagoplastic operations in which skin, stomach wall, whole stomach, jejunum and colon have been used in anastomoses with the upper end of the oesophagus. When an abdominal viscus is used in any other way than in simple gastrostomy, the two disadvantages are peritonitis and the risks of gangrene of the viscus in its antethoracic position owing to insufficiency of or interference with its blood supply. When skin is used for the formation of a tube on the anterior wall of the thorax, the greatest difficulty is encountered at the oesophagostomy opening. Saint also describes in detail various attempts which have been made at resection with or without accompanying plastic operations. He then describes his own experimental investigation.

The first part of his work was concerned with the blood supply of the oesophagus. He injected a mixture of bismuth and gelatin into blood vessels of dogs immediately after death and took a series of skiagrams. The blood supply was found to be scanty when compared with that

¹ Archives of Surgery, July, 1929.

of such an organ as the stomach. It was segmental in character. Most of the arteries were found to divide into ascending and descending branches and those of one particular segment anastomosed with the arteries supplying the segments above and below. This anastomotic network was scanty. The arteries quickly passed into the submucous layer and ramified there. According to the distribution of its blood supply the œsophagus was divisible into five segments: cervical, upper thoracic, middle thoracic, lower thoracic and abdominal. Saint describes the distribution in detail and shows that the circulation in the dog closely resembles that in man. He states that the ability of a suture to hold together the two cut ends of any viscus depends primarily on the conservation of a sufficient blood supply to the line of anastomosis and claims that his studies show that unless special care is exercised, it would be easy to produce enough constriction of the blood vessels by the sutures to cause sloughing of the two cut ends. He therefore adopted a special technique for the suture of the œsophagus of animals by means of number 0 Japanese blood vessel silk and a specially fine needle. He cut the œsophagus in the cervical region in dogs and sutured it again in the special manner which he describes in detail. In only one of the six animals did septic infection occur. Stricture occurred in two; this was regarded as being due to the taking up of too much of the œsophageal wall with the mattress sutures. Saint is carrying out further work in which resection is included, and is extending his operations to the thoracic part of the œsophagus.

The first thing to be remembered in connexion with surgical operations on the œsophagus in human beings is that the conditions calling for interference may be divided into malignant and benign, the lesion generally being a stricture. It is conceivable that if the patient sought relief at a sufficiently early stage and if resection were possible, removal might be carried out with success. As it is, when the patient comes under observation the growth has as a rule advanced considerably and the surrounding tissues are involved. Owing to the histological structure of the normal œsophagus and the clinical and pathological considerations mentioned, it would appear that what should be aimed at in malignant disease of the œsophagus is the perfection of such a method of approach that it would be possible to implant radium in suitable positions. Radium has been implanted in cancers of the œsophagus by the œsophagoscope and diathermy has also been used in conjunction with radium. Cleminson recently reported performance of thoracotomy for the purpose of implantation of radon in cancerous growths of the œsophagus.¹ Of the palliative measures the only one which should receive serious consideration at the present time is a permanent gastrostomy. The use of portions or whole of the stomach or other parts of the intestinal canal or the fashioning of a

tube of skin passing in front of the thorax, must be regarded as surgical curiosities. Occasional successes have been recorded, but the justification for such procedures must be regarded as doubtful. In the treatment of a benign stricture the outlook for the patient is different. If the mechanical blocking can be removed, the patient should be able to enjoy perfect health. It must be pointed out that if radium treatment of cancer of the œsophagus were successful, it might possibly leave the patient with a stricture; this would depend on the stage at which the radium treatment had been undertaken. In considering Saint's experimental observations in connexion with simple stricture, it must be remembered that he has not resected any portion of the œsophagus. If this were done, there would necessarily be an increased tension on the cut ends which had to be united. This would add to the difficulty. Saint's observations on the histology of the normal œsophagus are important; if use were made of his technique which has not been described owing to lack of space, it might be possible to remove certain benign strictures without the occurrence of subsequent disaster. Most benign strictures are the result of the ingestion of corrosives which produce cicatricial contraction. There is little likelihood that in these circumstances an element of spasm would be present. If there were reason to suspect the addition of an element of spasm, it might be considered whether division or removal of the sympathetic nerves supplying the part would be a suitable preliminary to any attempt at removal of the stricture. Such a procedure would obviate spasm of the blood vessels and increase the circulation in a place where it was sorely needed. Much more work must be done before surgery of the œsophagus can be regarded as being on a satisfactory plane. For this reason the promised extension of Saint's work will be awaited with interest.

THE USE OF GELATIN IN HÆMORRHAGE.

ALTHOUGH low blood pressure due to hæmorrhage is best treated by transfusion of blood, it is necessary to have a substitute for blood in case this is not available. Saline solution, glucose solution and gum acacia are not satisfactory because their action is not sufficiently sustained. W. F. Wolfson and F. Peller have carried out some experiments on rabbits with gelatin which merit consideration.¹ They have found that injection of a 5% solution of gelatin restores the blood pressure for several hours. They hold that the persistence of a low refractive index indicates that the gelatin solution remains in the circulation. The preparation of the gelatin for injection is not simple and before the method could be used on man it would be necessary to be quite certain that the risk of intravenous clotting, mentioned by Bayliss, was negligible.

¹ *Proceedings of the Royal Society of Medicine*, August, 1929.

¹ *The American Journal of the Medical Sciences*, October, 1929.

Abstracts from Current Medical Literature.

RADIOLOGY.

Duodenal Stasis.

JAMES A. EVANS (*Radiology*, September, 1929) describes the clinical symptoms suggestive of duodenal stasis. Chronic dyspepsia, often associated with migraine, a feeling of fullness, belching and sometimes vomiting, epigastric distress, more often immediately after eating and not relieved by soda or food, but sometimes yielding to assumption of the horizontal position. He describes stasis in each of four parts of the duodenum, the *pars horizontalis superior*, the *pars descendens*, the *pars horizontalis inferior* and the *pars ascendens*. Stasis in the first portion of the duodenum is more susceptible to accurate diagnosis as far as its cause is concerned, than is stasis in the other portions. In the *pars horizontalis superior* the causes of stasis may be bands of adhesions due to duodenal ulcer or gall bladder disease or congenital bands, a very common one of the latter being the duodeno-cholecystic band. In the *pars descendens* the obstruction may also be due to periduodenal adhesions. The root of the mesocolon to the ascending colon crosses this portion of the duodenum and a point of stasis at the very bottom of the descending portion associated with ptosis of the caecum would strongly suggest investigation of the middle colic artery. In the *pars horizontalis inferior* the greatest difficulty in diagnosis is experienced. The largest number of the author's patients with obstruction at this situation seemed to fall into the functional group, their stasis was due to arterio-mesenteric compression, the cause was reflex. The reflex causes of duodenal stasis are gall bladder disease, duodenal ulcer, chronic appendicitis and irritable colon. The author assumes as correct the description of Boreasco, Bécélère and Porcher of antiperistalsis in the duodenum. These observers state that antiperistalsis is normal in the second portion and very little developed, if not entirely absent, in the last portion and that pathological antiperistalsis is always accompanied by dilatation of the organ. Acceptance of this description means that when stasis occurs in the *pars ascendens* the point of duodenal irritability and antiperistalsis has been passed, making reflex stasis impossible at this situation. Stasis in the *pars ascendens*, therefore, is more safely considered to be mechanical and the site of the obstruction is at the duodeno-jejunal flexure. Illustrative cases with operative findings are cited in support of the views expressed.

RICHARD HAYES AND ARTHUR B. SHAW (*Radiology*, September, 1929) discuss the question of duodenal ileus.

They state that it is now generally conceded that non-inflammatory bands to the duodenum, either above or below the mesocolon, may cause intermittent obstruction and seriously interfere with the function of the duodenum. The radiologist by painstaking screen examination may almost invariably diagnose the presence of these bands. The type described as arterio-mesenteric ileus, due to mesenteric drag, is accepted by most medical practitioners as a definite entity; further study of this type is engaging attention. It is logical that the mesenteric root may, where the mesentery is short and the small intestine has undergone ptosis, exert sufficient drag to cause compression of the duodenum; on the other hand, in right-sided ptosis the *colica media* may exert the same compression. For symptoms of the disease the authors describe periodical bilious attacks with vomiting, resembling a typical migraine, though they state that true migraine is a different entity. Pain may be violent or absent, the situation and relation to food and the use of alkalis variable. Posture may give relief and, whilst constipation is the rule, there may be intermittent diarrhoea. If the duodenal compression is in the region of the ampulla of Vater, there may be enlarged and sensitive liver and gall bladder. When the symptoms persist over a long period, a state bordering on neurasthenia may result. With regard to aetiology, in nineteen patients operated on, no other pathological change was found than that due to membranes or supposed arterio-mesenteric pressure. The authors give the opinion of various authorities as to the cause of arterio-mesenteric ileus; most of these indicate a belief in pressure on the duodenum from the root of the mesentery. The authors add a paragraph on duodenal intoxication and state that in spite of the relative mildness of the motor insufficiency, there may be evidence of profound duodenal intoxication. Instead of fragmentary evacuation of the duodenum which normally is intermittent and rapid, in duodenal stenosis the food fills and distends the duodenum for the entire duration of gastric digestion. The more distal the situation of the duodenal compression, the graver the symptoms. According to some authors toxic substances are created by the duodenum, but according to others they are produced at the expense of duodenal secretions under the influence of bacteria which grow in the stagnant duodenal contents. The authors then report a series of cases illustrating their technique, operative findings being added in many instances.

Thoracic Position of the Stomach.

HUGH MORRIS (*Radiology*, September, 1929) reports a case in which the whole of the stomach lay above the diaphragm; he states that this is the fourth case to have been discovered by Röntgenological examination. The patient was a female, aged forty-four years, who had enjoyed good health

until a year previous to the examination. The signs and symptoms were indefinite, but a diagnosis of cancer of the stomach was suggested. At X ray examination the stomach was found to lie above the diaphragm, mainly on the right side, the oesophagus followed a normal course, but was shorter than usual, the pylorus corresponded with the opening in the diaphragm and the duodenum was in the abdominal cavity. The stomach emptied very rapidly and no evidence of ulcer or cancer was found.

Bronchiectasis.

ADOLPH HARTUNG (*American Journal of Roentgenology*, August, 1929), writing on bronchiectasis, states that the method of diagnostic bronchography with iodized oil makes possible the recognition of conditions which formerly escaped detection by the ordinary Röntgen examination, and has served to explain the nature of certain X ray appearances not formerly understood. As a result of this many suspected tuberculous infections, forms of asthma and chronic bronchitic infections are now recognized as being bronchiectases. Bronchiectasis the author describes as an anatomical entity characterized by dilatation of the bronchi. It attains pathological significance when infection occurs in the secretion of the dilated bronchi, producing chronic cough and other symptoms. Some bronchiectases may be congenital, but most of them are sequelae of diseases of infancy and childhood. Others follow conditions producing atelectasis, for example, aspirated foreign bodies. Occasionally the condition is associated with tuberculosis, lung abscess and paranasal sinusitis. Usually a long interval occurs between the inception of the disease and the time when it becomes sufficiently aggravated to cause the patient to seek medical aid. The dilatations may take the form of localized aneurysmal expansions called sacculations or the lumen may be uniformly enlarged, the latter cylindrical type being the more common. Frequently there are club-shaped enlargements at the distal ends of the dilatations. As a rule the walls of the dilated bronchi are thickened by inflammatory fibrosis. The condition occurs much more frequently in the lower lobes than in the upper and may be unilateral or bilateral. The Röntgen image associated with bronchiectasis is characterized by an increase of the linear markings with small irregular densities, usually occurring in the lower lobes. When the condition is advanced, there is a honeycombed appearance which is almost pathognomonic. When the dilatations are very pronounced, the injected oil stops abruptly before reaching the distal ends of the bronchi, unless there is a terminal enlargement or cul-de-sac. A comparison of Röntgen findings before and after the injection demonstrated that cylindrical and saccular dilatations could not be differentiated without injection. On the films before injection the com-

monest finding was increase in the linear markings. The degree of increase, however, does not always correspond to the size and extent of the dilatations as shown by the bronchograms. The greatest difficulty is experienced in interpreting slight increases in the markings and a peribronchial fibrosis from some such cause as recurring bronchitis is difficult to distinguish from that due to early bronchiectasis. When irregular densities are observed on plain films, these are usually found to coincide with the cul-de-sac shown after oil injection. When the dilatations are behind the heart, practically no evidence of them appears on the plain films, except displacement of the heart towards the affected side. The honey-combed appearance is usually evidence of an advanced stage of the disease. The author concludes that in about 60% of all cases a diagnosis of bronchiectasis could be made from a study of plain films and that in the majority of the remainder an examination without oil will reveal findings such as to indicate the probable presence of bronchiectasis, suggesting the desirability for investigation by bronchography. To obtain accurate information relative to the nature, location and extent of bronchiectases the use of iodized oil is essential.

PHYSICAL THERAPY.

Short Wave Length Radiation and Cancer.

M. JOLY AND QUÉLIN (*Bulletin de la Société de Radiologie Médicale de France*, February, 1929) again discuss the mode of action of rays of very short wave length upon cancer masses. In opposition to the theory of direct action, a purely local effect acting at the same time on the chromophilic part of the nucleus of the neoplastic cell and on the conjunction tissue is the hypothesis of indirect secondary effect. The writers attempt to bring a decisive, almost crucial argument, at least in so far as cancer of the breast is concerned, in favour of the theory of purely local action, thereby confirming the result previously obtained by Jungling. They quote the history of a woman, forty-four years of age, who attended a Röntgen therapy department of Beaujon Hospital in July, 1928, suffering from multiple metastases of a cancer of the breast which had been surgically removed in October, 1927. The metastases were so extensive that the condition appeared hopeless both from a surgical and radiotherapeutic point of view. In several places the skin of the operation scar, keloidal in character, was reddened like wine dregs. It was irradiated and the red areas changed to ochre, to brown, to yellow. The keloidal character disappeared and one month afterwards the whole of the irradiated surface and nothing but that surface had a perfectly normal appearance. The margin of this area coincided

exactly with the limits of the irradiated field. The authors point out that for this patient the marginal dose which was estimated as at least 15% of the central dose, had not the slightest influence upon the cancerous process. These findings were completely confirmed by histological examination.

Irradiation of Foodstuffs.

SERANO AND GRUTO (*La Presse Médicale*, September 12, 1928) state that in recent years considerable investigation has been carried out regarding the action of ultra-violet light upon food substances and especially upon oils of animal and vegetable origin for the purpose of endeavouring to increase their vitamin content. It has been found that crude animal and vegetable oils contain lipid which after irradiation can act as an antirachitic vitamin, and it was primarily thought that this property was due to cholesterolin content of the oil, but it has been found that cholesterolin does not possess this property, except when it contains impurities of phosphoric nature. The authors have specially studied the impurities generally found associated with raw cholesterolin and they have shown that these are phosphatides and bodies of similar composition which are capable of absorbing and then of emitting ultra-violet radiation, as can be discovered with a photographic plate. The action of ultra-violet light upon living bodies is still unknown and the secondary emission from irradiated substances is an observed phenomenon upon which at present only hypotheses can be made. The investigators do not wish to express definite opinions on the subject at present, preferring to return to it for further investigation. For the time being they derive the following points from their work. Complex bodies such as cerebrin, lecithin and cholophyll, basic substances of the animal and vegetable kingdoms, have photogenic properties after irradiation or after exposure to sunlight. Since cholesterolin and lecithin are constantly found associated, it is possible that the cholesterolin has a protective effect upon the lecithin and is capable of functioning as a radiosopic screen to ultra-violet rays, producing clearly defined shadows. But the property of lecithin is to absorb and give out energy. It is possible to form a hypothesis to explain the vigorous metabolic action of lecithin injections.

The Prognosis of Carcinoma.

H. SCHMITZ AND WILLIAM HUEPER (*Radiology*, November, 1928) discuss the prognosis of carcinoma. There are many factors which influence the outlook. The degree of histological malignancy, as represented by the infiltrative, destructive and histologic qualities of the tumour cells and of the stroma form the basis of the histological malignancy index. The extent of the tumour depends on the duration of the growth and its infiltrative intensity and forms the basis of

clinical grouping. The protective resistance of the host depends on age, race, sex, constitution and heredity. Chronic irritation produced by external agencies has a definite influence. Secondary complications, as result of mechanical pressure or secondary infection or toxæmia, have an unfavourable influence. The histological malignancy index and the clinical grouping should be mainly considered by the surgeon and radiologist in determining the line of treatment. Patients with a malignancy index of 68 or higher and a clinical grouping of four should not be subjected to needless operation or useless irradiation treatment. The malignancy index groupings and the percentages of five year end results manifest definite parallelism. The introduction of short wave Röntgen therapy to replace the long wave technique has more than doubled the five year cures in clinical Group III, an increase from 9.2% to 18.6%. Recurrent carcinomata with five year good end results indicated an absolute cure of 6% of the entire number, where the recurrences are local and movable, that is to say, belonging to Group R1. Recurrences which are outside this group cannot be expected to yield a satisfactory result.

Heliotherapy in Tuberculosis.

S. H. WATSON (*Archives of Physical Therapy, X-Ray and Radium*, June, 1929) discusses the value of heliotherapy in tuberculosis and states that it is not always indicated. In general direct sunlight is indicated in extrapulmonary tuberculosis and contraindicated in pulmonary tuberculosis. For no type is it a cure, but in the circumstances indicated it is a very valuable help. It should never be used to the exclusion of the usual standard therapeutic measures. Careless administration may do great harm, as the direct rays are very powerful. The degree of reaction that different patients exhibit, varies very greatly, especially in the beginning of the treatment and the treatment must therefore be administered according to the individual reaction rather than on any hard and fast rule. In pure surgical tuberculosis without pulmonary complications it may be practised freely without fear of doing any harm, but where there is coincident pulmonary infection great care must be taken, especially as regards exposing the thorax. In hilar tuberculosis it is of great value and should be used and in the treatment of some patients with the proliferative type it can be used with favourable results, if care is exercised. It is possible to convert a favourable stationary or healing lesion into a progressive one, if treatment is pushed too rapidly. It is never of value and is often positively harmful in the exudative type of tuberculosis as well as in all acute ones. In whatever type it is used, it should leave the patient feeling the same or better both during and after his treatment, otherwise there is danger.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Medical Society Hall, East Melbourne, on July 3, 1929, Mr. B. T. ZWAR, the President, in the chair.

Cerebral Operations.

An address was delivered by Sir Charles Ballance, entitled: "Certain Operations on the Brain, Including Some of Those Practised on Tumour of the Brain." He discussed the subject of intracranial tumours under the following headings:

Operations: (i) Local meningeal tumours, (ii) solitary manifestations of tuberculosis and syphilis, (iii) glioma and sarcoma, (iv) cysts, (v) no localization, optic neuritis and other symptoms.

Signs and Symptoms: (i) Is an intracranial tumour present? (ii) If so, where is it? (iii) What is its nature?

Varieties of tumour: (i) Epiblastic—cerebroma, glioma, epithelioma, *cholesteatoma vera*; (ii) mesoblastic—sarcoma, endothelioma, fibroma, psammoma; (iii) cysts—simple, hæmorrhagic, dermoid, parasitic; (iv) various—tuberculous, gummatous, vascular, secondary.

General cerebral symptoms, occurring singly or in combination: Headache, vomiting, optic neuritis, fits, slow cerebation, vertigo, alteration in pulse and respiration.

Certain localizing symptoms: (i) Mental, motor and oculo-motor phenomena, (ii) disturbances of associated movements, (iii) disturbances of equilibrium, (iv) speech affections, (v) abnormal sensory phenomena, (vi) alteration of reflexes, (vii) special sense affections, (viii) modifications of general function.

His address was freely illustrated by lantern slides and personal anecdotes. He said that it was valuable for them to look back on their work, to review old cases and so to reinforce their knowledge of the future. When he was first appointed surgeon at the National Hospital, Queen's Square, London, Victor Horsley had been the other surgeon. At first a patient with brain tumour had come for operation about once in three months. One of the kitchens had been used as an operating theatre. In spite of the *locale* operations had been performed with success, the Lister antiseptic method being employed. At that time little had been known concerning brain operations and the operations on men had been performed on the same plan as had proved successful in experiments on monkeys. The first operation in the National Hospital for decompression of the brain had not been performed before about 1894. It had been noticed in several instances in which a fruitless craniectomy had been done—fruitless as far as the removal of a tumour was concerned—that the operation was followed by the disappearance of the optic neuritis which had been present, especially when a considerable drain of cerebro-spinal fluid took place. It had therefore been considered justifiable to perform a craniectomy to relieve the optic neuritis and to prevent blindness in those patients whose tumour could not be localized.

At the Melbourne Hospital and at Saint Vincent's Hospital he had seen admirable craniectomy operations performed preparatory to the removal of a brain tumour. The operation had been performed with the same instruments by means of which Hippocrates operated in 500 B.C.

It was interesting that tumours could occasionally remain entirely latent, giving rise to no symptoms whatever. In the year 1875 a famous physician had had lateral lithotomy performed for stone in the bladder. For three weeks he had been convalescing well, but had then become ill with cerebral symptoms and died in twenty-four hours. At the *post mortem* examination a dermoid cyst the size of an egg had been found in the posterior parietal and anterior occipital subcortical regions on the left side. There were other cases known to every surgeon in which the typical symptoms of brain tumour were present, but

in which the patient had gradually advanced to complete recovery after decompression.

The factors which had done most to increase their knowledge of cerebral tumour had been the advance in cerebral physiology, the ophthalmoscope, the perimeter and the modern method of ventriculography. The phenomenon of pineal shift to which attention had been drawn by Dandy, had sometimes helped in the localization of tumours.

The operating surgeon had been called by Cushing a peculiar animal. He felt the responsibility which rested upon him. This was particularly heavy in some cases in which he could come to a definite and certain decision as to the nature of the condition, the position of the tumour or even of the fact that there was a tumour. Suddenly by some inexplicable mental process he decided to operate and performed the operation resolutely, confidently and with a certainty of success—a kind of "surgical inspiration." There was nothing supernatural in this. All his life the surgeon had been studying patients and the knowledge in his subconscious mind and the sum total of previous knowledge suddenly enabled him to come to a decision in difficult, indeed almost impossible cases.

When Sir Charles Ballance was first in practice the surgeon had practically never known what kind of tumour, if any, would be found at operation. Nowadays they knew the symptoms caused by various tumours. Even when the tumour was a glioma, in consequence of the magnificent work done by Cushing and his associates, its nature could be diagnosed and a certain prognosis be made. Many of these tumours were so horrible in their results that surgeons might be tempted to forsake the subject in despair, were it not that great progress had been made and that the certainty of even greater progress in the future could be seen.

Some tumours were extremely difficult in regard to diagnosis and the question of treatment. For example, Sir Charles Ballance described a patient whose only symptom for years had been a twitching at the right angle of the mouth. This had been diagnosed as a form of tic. After about six years optic neuritis had developed. Operation had been done, but the tumour could not be removed without producing aphasia and so it had been left *in situ*.

Another patient, a man, had developed headache, speech defects, vomiting and optic neuritis. He had become unconscious and had remained unconscious for two and a half months. He had been too ill, it was thought, for operation to be done. He had gradually completely recovered, but had been permanently blind from optic atrophy following optic neuritis. Even though no tumour had been found, decompression in this instance would have saved the patient from blindness.

Another patient had had typical symptoms of tumour, paralysis of the fifth and seventh cranial nerves, extensive cerebral irritative symptoms, fits, vertigo and vomiting. A diagnosis of right frontal tumour had been made. At operation no tumour had been found. At autopsy no tumour had been found. It had been suggested that in such cases microscopical tumours were scattered throughout the brain. Several such brains had been investigated with this in view, but in no instance had any sign of such lesion been discovered. Such cases were mentioned, not to disturb their faith in the recognized signs and symptoms of cerebral tumours, but to show that they were yet only in the borderland of real knowledge. There was an immense amount of labour and thought to be expended before they would solve the problems that confronted them. Surgeons had to believe that certain signs indicated a certain physical state. This might be said to be the essential condition to the existence of a surgeon.

The slide was shown of a large hæmatocoele of the subdural space. The man had been certified as insane and had been on the way to an asylum. Dr. James Taylor had found a considerable degree of optic neuritis and had sent him to Sir Charles Ballance who had diagnosed an intracranial tumour. At operation a large blood cyst measuring 17.5 by 5.0 by 8.75 centimetres (seven by two by three and a half inches) had been found and delivered whole through the opening without difficulty. The patient had

recovered and was still alive and sane. There were many similar cases in literature. Two such cases had been recorded by Richard Bright, of Guy's Hospital, in 1831. Sir Prescott Hewitt, of Saint George's Hospital, had reported the case of a boy who was hit by a cricket ball on the side of the head. He had been unconscious for a short time. After regaining consciousness he had been insane for several weeks and had then become quite well. During fifteen years the patient had had attacks of intermittent insanity, intermittent headache and intermittent paralysis. Sir Charles Ballance had operated on about a dozen of these patients who always gave a history of some injury; he had found in all of them an arachnoid hæmatocele. The symptoms were intermittent probably because of occasional little hæmorrhages into the tumour. In any patients presenting similar symptoms such a possibility should be borne in mind.

The second slide shown illustrated intracranial hæmorrhage in the newborn. Sir Charles Ballance said that this extremely important condition was often overlooked. If such children lived they usually suffered from cerebral palsy, fits and mental deficiency, all of which could have been obviated by operation. The hæmorrhage was usually due to forceps delivery. The important signs were a bulging fontanelle without pulsation, convulsions, bulging of one or both eyeballs, stability of the pupil on the affected side, subconjunctival hæmorrhage, irregular respiration and a rise in temperature. An early and important sign to which attention was generally drawn by the mother, was the infant's inability to suck. The operation for relief of this condition, when performed early, was easy. The bone of the infant's skull could be cut with strong scissors, the clot could be removed rapidly and the child suffered little shock. This condition was constantly being overlooked and Sir Charles Ballance considered that the operation should be performed far more frequently.

Patients with apoplexy were not usually seen by surgeons unless they recovered and were brought to hospital with hemiplegia. It was then usually too late for anything to be done. In one patient seen by Sir Charles Ballance shortly after the onset of the apoplexy, lumbar puncture had been performed while the patient was still unconscious. A quantity of deeply blood-stained fluid had been withdrawn and the patient had recovered consciousness. After three or four days she had become unconscious again, nothing further had been done and the patient had died. In some cases of apoplexy it was possible to remove the clot itself by making a trephine opening and incising the ascending parietal convolution. In early cases the clot was in a semi-fluid, treacly state and would ooze out under the influence of the intracerebral pressure. Whatever degree of success attended this operation was due to the fact that only some of the affected fibres were actually destroyed by the hæmorrhage. Others were put out of action by pressure. If this abnormal pressure were relieved by sufficiently early operation the latter fibres could be saved.

In 1885 Godlee had read a paper pointing out that fractures of the bones of the skull in young children differed from the corresponding injury in adults in that the injury was usually limited to one bone and did not spread to the adjacent bones. The bone was forced inwards; the fractured edges penetrated the meninges and frequently the brain itself. The elastic recoil of the fragments then carried with it torn tissues of the meninges and brain. There was then presented a pulsating tumour beneath the scalp on the side of the head. These patients in the old days had generally died because at any attempted operation sepsis occurred, but with modern technique they could be operated on with certainty and safety. A slide was shown illustrating the case of a child who had fallen a distance of 6.6 metres (twenty-two feet) on to the left side of the head. Bone had been removed and the opening in the *dura mater* enlarged to allow the brain hernia to return into the cranial cavity. The patient had rapidly recovered and two years later had completely regained the faculty of speech, while the only motor impairment remaining was a paresis of the upper arm.

Sir Charles Ballance then showed a slide illustrating an operation he had performed before the war for the

introduction of "Salvarsanized" serum into the lateral ventricle in cases of early general paralysis of the insane. He made a trephine opening just in front of the bregma on the right side and passed a blunt-ended trocar and cannula through the *corpus callosum* into the lateral ventricle. The serum was introduced through this by means of a tube and funnel. The speed with which the serum ran in was an index of the degree of patency of the foramen of Munro. After the introduction of thirty to sixty cubic centimetres the brain seemed to swell up towards the opening in the skull, but closer inspection showed that it was not the brain, but the arachnoid membrane lifted up by the yellow "Salvarsanized" fluid which was streaming towards the Pacchionian bodies in the superior longitudinal sinus. Sir Charles Ballance had not had opportunity since the war to continue with this method of operation, but he offered it as a suggestion that might prove to be of value in cases of very early general paralysis of the insane. Of three patients whom he had treated in this manner, two had not been traced. The third had been cured.

A slide was shown illustrating a *cholesteatoma vera* of the fourth ventricle. Most of these tumours had a tail passing downwards through the *foramen magnum* and it was sometimes necessary to divide the posterior arch of the atlas to gain access to this. From its position this tumour was very dangerous and operations for its removal were not uniformly successful.

Slides illustrating tumours in various situations in the brain were shown, an endothelioma of the meninges of the temporal fossa and a unique case of a cerebral carcinoma secondary to a carcinoma of the oesophagus. Sir Charles Ballance recalled a patient whom he had seen in consultation with Sir James Paget. The patient was a peer who had a small, hard tumour beneath the mucous membrane on the right side of the tongue. He was not a smoker and the tumour had obviously not been a primary carcinoma. Sir James Paget had said that he recalled only one similar mass which had proved to be a nodule secondary to carcinoma of the oesophagus. Sir James Paget had predicted that in three or four weeks the patient would have difficulty in swallowing. This had proved to be the case and the patient had died afterwards from the effects of primary oesophageal carcinoma.

Sir Charles Ballance then showed a slide illustrating a carcinoma of the parietal bone diploe secondary to a spheroidal-celled carcinoma of the breast. The tumour was hard, painless and slow-growing. He said that every bone in the body could be involved after removal of a breast carcinoma. He instanced experiments in which colloidal carbon had been injected intravenously in animals. The carbon had been deposited in the liver, the spleen and in the medulla of the bones. This was exactly the method of spread of carcinoma of the breast. Sir William MacCormac long years ago had had a patient from whom a mammary carcinoma had been removed four years previously. He had removed a tumour of the skull which proved to be a secondary carcinoma. Three months later he had removed another and three months later there had been another recurrence. At this stage he had desisted.

Slides were shown illustrating the occurrence of tumours in the brain secondary to sarcomata of the lungs. Sir Charles Ballance said that the most urgent need of medicine was a serum which would be antagonistic to what Paracelsus called the "spirit of the disease." Some Paracelsian method of avoiding mutilating operations was needed. In talking of sarcomata, he cited a tumour removed by Dunhill from the anterior mediastinum. In nine months it had recurred and the use of large quantities of radium had had no beneficial effect. Coley's fluid had been tried and the tumour had entirely disappeared. He believed that Coley's fluid was of great use in sarcomata, although without effect on carcinomata. It was his experience that when suppuration in the pre-Listerian days occurred after removal of a breast tumour, there was more chance of non-recurrence than if healing under modern conditions was by first intention.

In Berlin in 1884 he had seen cultures of erysipelas injected into patients with breast tumours and this had

had a definite effect in preventing recurrence. One hundred and sixty years ago Dr. Letsom who was President of the Medical Society of London and famous for the amount of time he gave to the poor, had been unkindly satirized by the following lines:

When patients come to I
I purges, bleeds and sweats 'em,
If after that they chance to die,
What's that to I?—I Letsom.

Sir Charles Ballance believed that bleeding had gone too much out of fashion. Even leeches were seldom used.

A number of slides was then shown illustrating various tumours. Several cysts of the cerebellum had been mounted in Saint Thomas's Hospital Museum. These were not simple cysts, but cysts resulting from the fluid degeneration of gliomatous cysts.

Sir Charles said that he had never seen a cerebral hydatid cyst, but he remembered that he had noted with interest the advice of the late Mr. Fred. Bird in this connexion, namely, that the danger of hæmorrhage after operation on these cysts might be obviated by packing the cavities with gauze.

In regard to an aneurysm of the internal carotid Sir Charles Ballance remarked that in any difficult case the surgeon should never omit the use of the stethoscope in examining the head. It was necessary to be a good physiologist before it was possible to become a neurological surgeon.

A picture of an immense meningioma which had entirely destroyed the right frontal lobe was shown. The patient who was a porter at Saint Thomas's Hospital, had fallen suddenly into the *status epilepticus* and had died. There had been no history of headache, but there had been a history of an injury in the frontal region ten years before at football. Although holes had been eroded by pressure in the frontal bone, the patient had made no complaint. This specimen of the frontal bone which Sir Charles Ballance had treasured, had disappeared while on exhibition at a medical congress.

Another picture was from a patient of the late Hughlings Jackson. It was that of a tumour of the anterior end of the temporo-sphenoidal lobe. The patient was a woman with a history of uncinat fits with an aura of horrible smell and the dream state. The tumour had been diagnosed by Hughlings Jackson, but no operation had been performed. Since that time many patients suffering from uncinat fits and the dream state had been seen. The condition in some had been due to temporo-sphenoidal abscess. The aura of a horrible smell was pathognomonic of a lesion involving the uncinat gyrus.

An angiolithic sarcoma of the occipital lobe was shown on the screen. The patient had had hemianopsia and catherine-wheel disturbances of vision. Five years previously both testicles had been removed for tuberculosis. On successful operation the tumour had been shown to be an angiolithic sarcoma.

In regard to a patient of Dr. Ferrier, when seen twenty years before, the patient, a woman of middle age, had been desperately ill; she had had Cheyne-Stokes breathing and the typical symptoms of a tumour of the left cerebellar hemisphere. She had suffered from intense pain which was a symptom of internal hydrocephalus or of a tumour actually within the brain substance and not in the meninges. The cerebellum had been exposed. There had been very greatly increased intracranial pressure, but no tumour had been found. Subsequently the left cerebellar hemisphere had sloughed off. The patient had recovered and was quite well and leading a very active life, but there was still a bulge of the scalp flap behind the left ear and Sir Charles Ballance had been expecting that something would happen. So far nothing had occurred.

In contrast with this case Sir Charles showed a slide illustrating the condition of a patient, a milkman, who had been kicked on the head by a horse. Pieces of bone in the shape of a horseshoe had been driven inwards. These had been removed, but had left behind them a permanent concavity. A case somewhat similar to this last was that of a man in whom a tumour of the occipital lobe had been diagnosed. On incision a healed fracture

had been exposed. The patient had given no history of injury, but subsequently had remembered having been kicked by a horse fifteen years before. Beneath the fracture a large cystic glioma had been found. The whole of the occipital lobe on that side had been removed. In commenting on this case Sir Charles Ballance observed that no operation, such as the removal of an entire cerebral hemisphere, was justifiable if it interfered with the speech centre.

A patient had been sent to Sir Charles Ballance by Dr. Shipman. She was a girl who had fallen from a height on to an iron spike. This had perforated her forehead and suppuration with occasional bleeding had occurred. A diagnosis of meningo-cerebral abscess had been made and after removal of portion of the frontal bone such an abscess had been removed. For three or four months after removal the wound had still oozed, with frequent small hæmorrhages. Death had then occurred. At *post mortem* examination a sarcoma of the frontal lobe had been found. This sarcoma had evidently followed the entry of the infective agent by means of the spike. Sir Charles gave it as his firm opinion that malignant disease was due to a living organism. In support of this he cited the effect of Coley's fluid on sarcomata, particularly on the very rapid and malignant periosteal sarcomata of children. In this connexion he remarked that Lister and antiseptic surgery had transformed the "dead meat" pathology into a pathology in which disease was examined *in vivo*. A very important sign in children was the bulging of the skull bones over the region of the tumour.

A number of slides was then shown illustrating various tumours of the cerebellum. One showed a condition of pronounced torticollis in a lesion of the right cerebellar hemisphere with abduction of the homolateral leg. Others included a large tuberculoma of the cerebellum which had been removed with complete recovery; two tuberculous tumours, one in each cerebellar lobe, one producing symptoms and the other being entirely symptomless; an endothelioma of the meninges of the cerebellum; multiple tuberculous tumours of the cerebellum, two had been removed in March, 1910, in July three more had been removed and the patient had died a year later; a tuberculous cerebellar tumour which had been removed. In this instance three months later the patient had had convulsions and died. At *post mortem* examination a large intracerebral hæmorrhage had been found. This had probably been due to tuberculous infection of an artery.

A picture of a cerebellar tumour was shown in which there was involvement of the sixth nerve. The tumour had caused the stretching of a transverse pontine artery which had exercised pressure on the nerve.

A cerebello-pontine tumour had by pressure caused destruction of portion of the petrous temporal bone. Sir Charles Ballance remarked that auditory nerve tumours frequently caused enlargement by pressure erosion of the internal auditory meatus. A slide was shown of a cerebello-pontine tumour drawn and described by Lebert in 1850. A slide was shown of a tuberculous abscess in the cerebello-pontine angle.

In regard to auditory nerve tumour, the first example of this tumour had been recognized about the year 1888. The symptoms had been deafness, vertigo, tinnitus, headache and optic neuritis.

Reference was made to a woman of twenty, from whom an intracerebellar cystic glioma had been removed with complete recovery and no recurrence.

Several slides were then shown illustrating tumours in other situations. A meningioma had hollowed out the greater part of one frontal lobe. The patient had sustained the loss of all higher mental functions. There had been a slight hemiparesis of the opposite side and incontinence of urine.

Œdema had occurred in association with a tumour. In the particular case illustrated the tumour was secondary to a renal carcinoma. This œdema was invariably fatal. Cultures had been made of these œdematous brains, but had given no results.

A glioma of the occipital lobe, accompanied by hemianopsia, was shown.

A picture of a tumour drawn and described by Lebert (1850) and Cruveilhier (1838) was shown. They had called it a fibroplastic tumour, but at the present time it would be called an endothelioma.

A huge meningioma had been removed successfully by William Keen, a pioneer of brain surgery in the 'eighties. This operation was the first occasion on which the lateral ventricle had been opened.

A gliomatous cyst was illustrated. There was great difficulty in draining these cysts, as the fluid tended to clot on cooling and block the tube.

Another slide was one of a sarcoma of the frontal lobe, involving the frontal bone and causing a prominence of the right side of the forehead. It was Sir Charles's experience that whenever a sarcoma involved the bones of the skull, the bone on section wept blood and it was impossible to stop the bleeding.

In concluding, Sir Charles Ballance recalled the suggestion of Spiller, of Philadelphia, who had proposed in the presence of intense pain due to malignant disease that as a purely palliative measure the pain fibres in the cord should be cut and relief thus afforded. This had several times been done with complete success. Many of the older physicians had said that they had never had a patient with cerebral tumour in their wards. Sir Charles Ballance said that these physicians had not recognized the tumours that they had seen. It was noteworthy that wherever a surgical neurological clinic had been instituted with sufficient means at its disposal for diagnosis and study, there had been at first very few tumours, but within a short period recognized cerebral tumours had become very numerous. It was therefore only reasonable to suppose that there were still many cases of cerebral tumour unrecognized.

SIR RICHARD STAWELL thanked Sir Charles Ballance and said that a full review of the surgery of the brain was in any circumstances extremely interesting, but that evening, when presented by one of the masters of cerebral surgery, it had been inspiring. There was a special appeal to him because when Sir Charles Ballance was a surgeon at the National Hospital Sir Richard Stawell had been an insignificant student and Sir Charles Ballance had been pointed out to him as one of the coming great brain surgeons. The fruits of his experience had been given to them that night in a most delightful and instructive way. This was to be regarded as one of the most memorable evenings in the history of the Branch.

MR. ALAN NEWTON said that it had been a great privilege to hear Sir Charles Ballance, because Sir Charles was one of a small group who had not only successfully practised the art of surgery, but had materially increased their knowledge of its science. Sir Charles Ballance was supposed to be on holiday, but had most cheerfully responded to the demands made upon him for operations and lectures. He personally was extremely grateful to Sir Charles Ballance for the help given in these operations and lectures, but he would benefit also from the example of one who, instead of resting on his laurels, was so cheerfully and unselfishly giving up valuable time to teach others.

Medical Societies.

THE CLINICAL SOCIETY OF THE HOSPITAL FOR SICK CHILDREN.

A MEETING OF THE CLINICAL SOCIETY OF THE HOSPITAL FOR SICK CHILDREN was held at the Hospital for Sick Children, Brisbane, on July 25, 1929, Dr. D. GIFFORD CROLL in the chair.

Depressed Fracture of the Skull.

DR. M. PATTERSON, for Dr. G. P. DIXON, showed a child, aged eight months, upon whom a railway sleeper had fallen five weeks before. The child had sustained a large depressed fracture of the right parietal bone. There had been no vomiting, no loss of consciousness and no untoward

symptoms had been noted since. Dr. Dixon asked for an expression of opinion as to treatment.

DR. DONALD CAMERON considered the child should be left alone.

DR. C. E. TUCKER thought that the depression should be elevated.

Heart Disease.

DR. SHIRLEY LANE showed a child, aged ten and a half years, who had been coming to the hospital over a period of six years. On March 5, 1929, the child had complained of tightness in the throat and chest. He had yawned to get his breath and had been noticed to twitch at night. The child had made a similar complaint six years previously and had been treated in hospital. He slept on a low pillow.

On examination the child had been pale; the heart and chest appeared normal. The urine was free from albumin and sugar and examination revealed no abnormality. On March 19, 1929, the blood count had been normal. The boy had still been catching his breath. He had played cricket and football. The condition had been regarded as a functional one. On July 16, 1929, the child had returned to the out-patient department on account of the twitching. X ray examination revealed a dilated aorta and an enlarged left ventricle. On examination systolic and diastolic murmurs were heard just over a small area about the fourth interspace. On July 19, 1929, the Wassermann test had failed to yield a reaction.

The consensus of opinion was that the boy should be left alone to forget he ever had a heart. It was agreed that a lateral X ray picture would have been interesting.

Diabetes Mellitus.

DR. H. MATHEWSON showed a child, aged one year and ten months, suffering from diabetes, who had previously been shown when he was one year and five months old. He was well nourished and appeared to be thriving.

On admission the question had arisen as to whether the child was a diabetic. The resting blood sugar had been 0.12, the curve had risen to 0.23, had fallen a little and four hours later had been 0.35. It had been demonstrated that this was a true diabetic curve. After one week's starvation the child's urine had become sugar free and the diet had been increased to 1,000 calories which was rather more than was necessary, as the child was resting. Her urine had remained sugar free for a time, but had then varied considerably. Dr. J. V. Duhig had considered the child could be cured if she were given "Insulin." Dr. Mathewson, however, had continued with dieting alone. At first the child did not put on weight, so the diet had been increased. On admission the weight had been 9.0 kilograms (twenty pounds), on commencing dieting it had fallen to 7.6 kilograms (seventeen pounds), had varied a little round this figure and then had risen again to 9.0 kilograms. The child had been given eight units of "Insulin" every day. She had twice become hypoglycæmic and had been relieved by the administration of glucose. The child's physical condition when the urine was free from or contained sugar, did not vary. She seemed to be brighter when sugar was present.

DR. CYRIL SHELLSHEAR suggested that the carbon dioxide combining power should be estimated and that an X ray picture of the pituitary fossa should be taken.

Coeliac Disease.

DR. S. F. McDONALD showed a child, aged seven years, who had been complaining for the previous two years of diarrhoea which had been present intermittently and was gradually becoming worse. The motions were large, white and frothy and had a bad odour. Since the child had been on diet he had had two motions a day and the stools had been hard, crumbly and dry and pale in colour. The child was always tired, had no energy and the appetite was ravenous. One week previously he had had severe abdominal pains situated in the right iliac fossa; the pain had become worse when he tried to walk.

On examination he was not a healthy looking child and was fairly tall, though slightly below the average.

His condition had been diagnosed as cœliac disease and he had come into hospital on a strict diet, rusks, later bread, meat, fish, tripe, brains, white of egg, "Mellin's Food," "Trufood skim milk," grape nuts, gelatin, jelly crystals, half an orange. This diet was free of fat; the main trouble was that in cutting off the fat the growth vitamin was cut off and also the antirachitic vitamin. The latter could be obtained in the form of "Ostelin" which this child was having. On admission an experiment had been carried out. The child had been given normal diet for two days; on the first day he had had a normal light brown paste motion; on the second day he had had two motions, one being large, yellow and semiformed, the second large, semiformed, pale and offensive.

Dr. McDonald said that cœliac disease of this type was generally missed and the patients were put on to a milk diet which, of course, was the worst thing for them. This child had started rather late with his attack. Cœliac disease was very difficult to treat, as the bulk of a child's diet consisted of milk, but since the separated vitamins had been obtainable, the outlook was better. The Americans used a large amount of skim milk with lactic acid. It had been shown that the disease was not merely due to failure of absorption from the bowel, but also to failure of utilization in the blood stream and the condition could be compared to diabetes. The only possible way of treating these children was to keep the fat down as much as possible. This patient had orange juice in his diet, a thing not generally tolerated.

This child did not show the typical thin, wasted buttocks, though he possibly might do so if he were kept on a diet unsuitable for him. He had the enormous pot belly characteristic of the disease. Patients with cœliac disease were generally very precocious and interested in their own diet and condition.

Dr. D. GIFFORD CROLL remarked on the large collateral circulation on the abdominal wall and the enlarged liver.

Encephalitis.

Dr. S. F. McDonald also showed a girl who had first been seen three years previously when she had an attack of typical encephalitis. She had improved after that and had become fairly normal, but she had had three relapses. She had been admitted two weeks previously in a drowsy condition, scarcely speaking and with nystagmus and wasting. There was no evidence of a tumour.

Dr. ELLIS MURPHY said that in England these conditions were looked upon as being more like syphilis; the virus was still alive and it was difficult to say when the patient was cured.

Dr. C. E. TUCKER showed a patient, aged three and a half years, with a cleft palate and hare lip who was a bleeder. The child had not passed urine for thirty-six hours on account of an adherent prepuce. The child had been circumcized and the bleeding had not stopped for some considerable time. A blood count had been done with the following result:

Erythrocytes, per cubic millimetre ..	4,670,000
Hæmoglobin value	85%
Colour index	0.9
Leucocytes, per cubic millimetre ..	1,600
Neutrophil cells	31%
Lymphocytes	67%
Large mononuclear cells	2%

The erythrocytes had been normal and the platelets had numbered 390,000 per cubic millimetre.

The coagulation time of successive drops of blood had been nine to eleven minutes and of a control nine minutes. The bleeding time had been prolonged.

The child had been looked after since then and had gained nearly 1.3 kilograms (three pounds) in weight and Dr. Tucker considered that he was now in a moderately good condition for operation. He thought that this was a case in which the hard palate had to be operated on first; the premaxilla was joined to the right maxilla and he thought there was enough of the hard palate on either side to meet. He proposed to do a Brophy's operation, to repair the hard palate and then

in about six weeks to repair the lip. At sixteen to twenty months of age the soft palate would be repaired. It was very difficult to decide whether there was actually loss of tissue or whether there was a normal amount of tissue and simply non-union.

Myxo-Sarcoma of the Orbit.

Dr. E. O. MARKS showed a child with a myxo-sarcoma of the orbit. The child had been seen by Dr. Lockhart Gibson six months previously. A swelling had been removed from the margin of the orbit which on examination had been found to be a myxo-sarcoma. Radium had been applied and there had been some recurrence. Dr. Graham Brown had applied more radium, but the child had been brought into hospital one month previously. The whole eye had been pushed out and the lids were pulled apart.

Dr. Marks had consulted with Dr. Gibson and had decided to clean out the orbit and apply radium. The first lot of radium after the orbit was cleaned out, had been applied to the optic nerve, radium had been applied further forward. The orbit was granulating and there was no sign of recurrence. There was still some bare bone in the upper part of the orbit.

Dr. Burrows had seen the child at the radium clinic and had said that myxo-sarcomata did not respond well to radium.

Interstitial Keratitis.

Dr. Marks also showed a child with interstitial keratitis. This child had had potassium iodide 0.42 gramme (seven grains) three times a day, daily inunctions of mercury and "Bismol" in doses of 0.5 cubic centimetre every week. She had already had three cubic centimetres of "Bismol." She had been in the hospital four weeks and had done very well. The eye had been very hazy before and at the time of demonstration was nearly clear.

Obituary.

ARTHUR MURRAY ORAM.

ALTHOUGH Arthur Murray Oram has lived in practical retirement for some years, a very large number of medical practitioners in Sydney were shocked at the news of his death and recalled with much sympathy the memory of his familiar face and figure. He was born at Bathurst, New South Wales, on May 16, 1856. His father, Joseph Oram, was a Wesleyan minister. He was educated at a private school at Bathurst and at Newington College on the Parramatta River. During his school days he was studious and intelligent. He occupied a good place at school and was recognized by his teachers as a boy of more than ordinary ability. He gained a gold medal at Newington College when he passed the senior examination of the University and then matriculated. At the age of seventeen years he studied at the Sydney Infirmary and Dispensary under the late Normand MacLaurin. There was at that time no medical school at the University. The Sydney Infirmary and Dispensary came into existence in 1845 when the Sydney Dispensary took over the south wing of the Macquarie Street Hospital. Later the institution became the Sydney Hospital. Arthur Murray Oram found the study of medicine much to his liking, more particularly because in those days it did not involve a long education in the fundamental sciences without direct application to the practical problems of clinical medicine. He was permitted to come into immediate contact with patients and it was this early opportunity that awakened in him an intense love for his professional work and a determination to do what he could to alleviate suffering and to cure disease. He then travelled to Scotland and entered the University of Edinburgh. In 1879 he obtained the degrees of bachelor of medicine and master of surgery. Two years later he submitted a thesis on rickets which gained for him the degree of doctor of medicine. He

returned to Australia after he had served as house surgeon at a general hospital in London and after he had held a position at the Royal London Ophthalmic Hospital at Moorfields. He arrived in Sydney in 1882 and began practice in Liverpool Street. At this time he was associated with the late Alfred Roberts and identified himself with him in the work of the foundation of the Prince Alfred Hospital. The authorities of the University of Sydney lost no time in conferring on him the degree of doctor of medicine *ad eundem gradum*. In 1883 he was appointed Honorary Physician to Out-patients at the Prince Alfred Hospital and about the same time he obtained the position of Visiting Physician to the Children's Hospital. His private practice grew rapidly and as many of his patients moved to the newly established suburbs, the area of his activities extended within a short time. In 1890 he moved to Macquarie Street, before the consulting world had migrated from Liverpool and College Streets. He was a skilled physician and possessed the old-time intuition in diagnosis and treatment. His patients loved him and trusted him implicitly in return for the intense interest and unremitting care he bestowed on them. In 1891 he resigned his position at the Prince Alfred Hospital and the occasion was seized by his colleagues to signalize the high esteem in which they held him. The medical board of the hospital presented him with an address signed by Phillip Sydney Jones, Alfred Roberts, Alfred Shewen, George T. Hankins, Charles Clubbe, James C. Cox, A. MacCormick, Joseph Foreman, F. Antill Pockley, David Collingwood, James Graham, Samuel Knaggs, William Chisholm, George E. Twynam and Edward T. Thring. The following sentence is worthy of reproduction: "Your connection with the hospital since 1883 has enabled you to prove your disinterested devotion to the well-being of your fellow creatures and your great skill and interest in professional work." He had the address framed and it hung for many years in his consulting room, a constant reminder of the appreciation of his colleagues. He worked very hard and took few holidays. It was not until he was approaching seventy years of age that he realized that he needed rest.

In his young days he took an interest in cricket and loved horses. He was a good rider and delighted in taking his recreation in this way. Throughout the greater part of his life he devoted nearly all his leisure to his home, which has been described as ideal. He was quite unselfish, an excellent husband and a true friend. For many years he lived in Pott's Point and he took a great delight in his pretty garden and the beautiful view of the Sydney Harbour until the advent of tall buildings interrupted the vista. In expressing the sympathies of the medical profession to his widow and sisters, we are able to offer the consolation that Arthur Murray Oram's life has been of great benefit to all those who sought his aid and that his colleagues held him in high respect and affection.

WILLIAM DIGAN LANGTON.

WE regret to announce the death of Dr. William Digan Langton which occurred at Sydney on November 22, 1929.

GUSTAV HALL BÖHRSMANN.

WE regret to announce the death of Dr. Gustav Hall Böhrsmann which occurred at Sydney on November 25, 1929.

MARK GLANVILLE.

WE regret to announce the death of Dr. Mark Glanville which occurred at Fremantle, Western Australia, on November 28, 1929.

ATHELSTAN JOHN HENTON SAW.

It is with very great regret that we learn of the death on November 28, 1929, of the Honourable Athelstan John Henton Saw, M.L.C., M.D., Chancellor of the University of Western Australia.

Correspondence.

THE REGISTERING OF BODY TEMPERATURE.

SIR: It is in no spirit of pedantic criticism that I draw attention to what I consider to be a misstatement of clinical fact in Dr. L. Meagher's excellent article entitled "The School Child" (THE MEDICAL JOURNAL OF AUSTRALIA, November 16, 1929), the offending statement being in reference to taking of body temperature by mouth with the mercury thermometer: "Some take two minutes, others only half a minute to register."

The mere labelling of an instrument fails to render it an instrument of perfection, and I have yet to see the "half-minute" thermometer which attained the desired (maximum) body temperature in that short interval. Presuming that ordinary precautions are taken, *id est* no hot or cold fluid having been taken within half an hour of the examination and the mouth being kept tightly closed whilst the thermometer is *in situ*, the "half-minute" thermometer can be shown to be still rising (if but slightly) at the end of from eight to ten minutes.

Following are three series of oral registrations, readings being taken at periods of half-minute, 2, 4, 6, 8, 10, 15 minutes after insertion:

(i)	98.0	98.4	98.9	99.0	99.1	99.2	99.3
(ii)	96.6	96.8	96.9	97.1	97.1	97.2	97.2
(iii)	98.0	98.3	98.6	98.8	98.9	98.9	98.9

If the final temperature be higher, up to 102°-103°, the initial rise is more rapid and the difference between the two- and ten-minute registrations proportionately less. A maximum temperature is attained more rapidly in the case of rectal measurement in (usually) two minutes; if the temperature is measured in the axilla, the thermometer should be left in position at least ten minutes to register body temperature.

The explanation of this variation seems to be that, unless specially prepared, both the axilla and the mouth are initially at the temperature of the surrounding atmosphere rather than of body temperature. When the thermometer is introduced, heat is exchanged in accordance with the principle of thermic exchanges and accordingly, in order that the maximum body temperature shall be registered by the thermometer, the enclosed parts, *id est* the mouth or the axilla, must have time to reach the temperature of the body. In the case of rectal temperature, the part examined is not exposed to external conditions and is more constantly at the temperature of the body.

In cases where a small rise of temperature is important, for example, in suspected pulmonary tuberculosis, such a rise may pass unobserved if the thermometer is retained only half a minute or two minutes, as the case may be.

It is a noteworthy fact that patients who have been in hospital for a chronic complaint and who take their own temperature regularly at home, frequently show a temperature chart running parallel with that of the hospital period, but about one degree above it.

The variations in temperature at various parts of the body and accessible organs and of the body at different periods of the day do not fall within the scope of this letter. It is desired merely to emphasize that, in taking the temperature in the mouth the thermometer must be left in at least ten minutes, inconvenient though it be, if the maximum temperature is to be registered.

Yours, etc.,

DAVID B. ROSENTHAL,
M.D., B.S. (Melb.).

10, Oulton Street, Caulfield,
Victoria.

November 18, 1929.

THE ALEXANDER WILSON TESTIMONIAL.

THE Alexander Wilson Testimonial Fund which was mentioned in THE MEDICAL JOURNAL OF AUSTRALIA of November 9, 1929, was closed on November 30, 1929. The amount received was upwards of £400. Individual receipts have been forwarded to subscribers. The cheque will be presented to Mr. Wilson by the Chairman of the Medical Board, Professor A. E. Mills, at the meeting of the board on December 9, 1929, at 5.30 o'clock p.m. at the Royal Prince Alfred Hospital. It is hoped that as many of the subscribers as possible will attend.

Books Received.

CLINICAL MEDICINE FOR NURSES, by Paul H. Ringer, A.B., M.D.; Third Revised Edition; 1929. Philadelphia: F. A. Davis Company. Post 8vo., pp. 340, with illustrations. Price: \$3.00 net.

THE NUTRITION OF HEALTHY AND SICK INFANTS AND CHILDREN FOR PHYSICIANS AND STUDENTS, by E. Nobel, C. Pirquet and R. Wagner: Authorized Translation by Benjamin M. Gasul, B.S., M.D.; 1929. Philadelphia: F. A. Davis Company. Royal 8vo., pp. 258, with illustrations. Price: \$3.50 net.

ACUTE INFECTIOUS DISEASES: A HANDBOOK FOR PRACTITIONERS AND STUDENTS, by J. D. Rolleston, M.A., M.D. (Oxon.), M.R.C.P. (London), F.S.A.; Second Edition Revised and Enlarged; 1929. London: William Heinemann (Medical Books) Limited. Demy 8vo., pp. 427. Price: 15s. net.

THE NEUROSES, by Israel S. Wechsler, M.D.; 1929. Philadelphia: W. B. Saunders Company; Melbourne: James Little. Demy 8vo., pp. 330. Price: 20s. net.

THE ESSENTIALS OF CHEMICAL PHYSIOLOGY FOR THE USE OF STUDENTS, by W. D. Halliburton, M.D., LL.D., F.R.S., J. A. Hewitt, Ph.D., D.Sc., and W. Robson, Ph.D., D.Sc.; Twelfth Edition; 1929. London: Longmans, Green and Company. Demy 8vo., pp. 394, with illustrations. Price: 9s. net.

Diary for the Month.

- DEC. 10.—Tasmanian Branch, B.M.A.: Branch.
 DEC. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 DEC. 10.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 DEC. 11.—Central Northern Medical Association, New South Wales.
 DEC. 11.—South Sydney Medical Association, New South Wales.
 DEC. 12.—Victorian Branch, B.M.A.: Branch (Annual).
 DEC. 12.—Victorian Branch B.M.A.: Council.
 DEC. 12.—Section of Orthopaedics, New South Wales Branch, B.M.A.
 DEC. 13.—Queensland Branch, B.M.A.: Branch (Annual).
 DEC. 17.—Tasmanian Branch, B.M.A.: Council.
 DEC. 17.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments.

Dr. William Patrick Hugh Parker has been appointed Assistant Medical Superintendent, Hospital for the Insane, Toowoomba, Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xviii.

CAIRNS HOSPITALS BOARD, QUEENSLAND: Resident Medical Officer.

MELBOURNE HOSPITAL, VICTORIA: Honorary Vacancies.

RENWICK HOSPITAL FOR INFANTS, SUMMER HILL, NEW SOUTH WALES: Medical Superintendent (male).

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 21, Elizabeth Street, Sydney	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Mount Isa Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Boomerang Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to positions at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.